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GUIDE FOR ESTIMATING TOXIC RESIDUES IN ANIMAL FEEDS OR DIETS

UTAH STATE UNIVERSITY

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ENVIRONMENTAL PROTECTION AGENCY

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milk
dairy cattle
pullets
laying hens
chickens
horses
sheep
swine
breeding
turkeys
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dry forage and roughages
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energy feeds
milk
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eggs
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SECTION 1

GUIDE FOR USE OF TABLES

International Nomenclature

The international nomenclature of the feeds is based on a scheme proposed by Harris et al*, which gives to each feed a unique generic name. These names, called "International Feed Names," give, to the extent that the information is available, a qualitative description of the feed. A complete International name consists of as many as nine components, written out in linear form, with components separated by commas.

The components are:

- Scientific name (genus and species)
- Variety or kind
- Common name of feed (origin, species, variety, or kind)
- Part of plant, animal or feed product
- Process(es) and treatment(s) undergone before fed to animal
- Stage of maturity (as applicable)
- Cutting or crop (as applicable)
- Grade or quality designations
- Classification

Feeds of the same origin (or species, variety or kind if known) have been grouped into eight classes each of which is designated at the end of the

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*Harris, Lorin E., J. Malcolm Asplund and Earle W. Crampton. 1968. An International feed nomenclature and methods for summarizing and using feed data to calculate diets. Utah Agr. Exp. Sta. Bul. 479.

International name by a number in parentheses. This number forms the last term of the name of a feed, and is also the first digit in its six digit International reference number.

The numbers and the classes which they designate are:

Code Class description

- (1) Dry forages and roughages
  - Hay
    - Legume
    - Nonlegume
  - Straw
  - Fodder (aerial part w ears w husks or w heads)
  - Stover (aerial part wo ears wo husks or wo heads)
  - Other products with more than 18 percent fiber
    - Hulls
    - Shells

This class includes all forages and roughages cut and cured. Forages or roughages are low in net energy per unit weight, usually because of the high fiber content though sometimes because the water content is high. According to the nomenclature, products that in the dry state contain more than 18 percent crude fiber are classified as forages and roughages. Thus, in addition to forages, such products as oat hulls, peanut hulls, and cottonseed hulls are classified as roughages and are included in this group.

(2) Pasture, range plants, and forages fed green.

Included in this group are all forage feeds not cut and cured. For example: all feeds cut and fed green, or feeds cured on the stem, such as dormant range plants. The term "fresn" is used as a process term for most of these feeds though they may be dry and weathered when consumed.

- (3) Silages
  - Maize
  - Legume
  - Grass

- (4) Energy feeds
  - Cereal grains
    - Low in cellulose

High in cellulose
Fruits
Nuts
Roots

Products with less than 20 percent protein and less than 18 percent crude fiber are classified as energy feeds.

(5) Protein supplements

Animal
Avian
Marine
Milk
Plant

Products which contain 20 percent or more protein.

(6) Mineral supplements

(7) Vitamin supplements

(8) Additives
  Antibiotics
  Coloring material
  Flavors
  Hormones
  Medicants

The guide lines for classification are approximate and there is some overlapping. The feedstuffs have been classified in this manner because each class has certain properties that are considered in balancing diets.

The scientific name comes first for each group of feeds, followed by the feed names with the same scientific name. Table 1 shows how three feeds are named using the nomenclature system presented in tabular form.

Thus, the International names of the three feeds in Table 1 are written as follows:

No. 1: Corn, dent, aerial part, ensiled, (3)

No. 2: Pangolagrass, aerial part, fresh, early bloom, (2)

No. 3: Soybean, seeds, solv extd grnd, mx 7% fiber (5)

Note that the components are separated by commas.

Table 1. Examples of international feed nomenclature

Components of Name	Feed No. 1	Feed No. 2	Feed No. 3
Genus (of parent material)	Zea	Digitaria	Glycine
Species	mays	decumbens	max
Variety or kind	indentata	-	-
Common name (origin)	Corn	Pangolagrass	Soybean
Variety	dent	-	-
Part eaten	aerial part	aerial part	seeds
Process(es) and treatment(s) to which product has been subjected	ensiled	fresh	solv extd grnd
Stage of maturity	-	early bloom	-
Cutting or crop	-	-	-
Grade or quality designations	-	-	mx 7% fiber
Classification	(3) (silages)	(2) (pasture, range plants, and forages fed green)	(5) (protein supplements)
Other name			Soybean meal solvent extracted (AAFCO)
Reference No.[a]	3-02-912	2-03-491	5-04-604

[a] The first digit of the reference number refers to the class of the feed.

The six digit reference number listed after each name may be used as the "numerical name" of a feed when performing linear programming with electronic computers. Note that the first digit of the reference number of a feed is its classification designation.

Abbreviations have been devised for many of the terms used in the International feed system (Table 2). Stage of maturity terms are given in Table 3. See Table 4 for weight-unit conversion factors and Table 5 for weight equivalents.

Table 2. Term abbreviations used in the international feed names

AAFCO	Association of American Feed Control Officials
Can	Canadian
CE	Canadian Eastern
CFA	Canadian Feeds Act
CGA	Canada Grain Act
cp	chemically pure
CW	Canadian Western
dehy	dehydrated
extd	extracted
extn	extraction
extn unspecified	extraction unspecified
g	gram(s)
gr	grade
grnd	ground
ICU	International Chick Units
IU	International Units
kcal	kilocalories
kg	kilogram(s)
lb	pound(s)
mech	mechanical
mech extd	mechanical extracted, expeller extracted, hydraulic extracted, or old process
μg	microgram
Mcal	megacalories
mg	milligram
mm	millimeter
mn	minimum
mx	maximum
NRC	National Research Council
ppm	parts per million
s-c	sun-cured
solv extd	solvent extracted
spp	species
US	United States
USP	United States Pharmacopeia
w	with
wo	without
wt	weight

Table 3. Stage of maturity terms used in the international feed names

Preferred term	Definition	Comparable terms
For Plants That Bloom		
Germinated	Stage in which the embryo in a seed resumes growth after a dormant period.	Sprouted
Early vegetative	Stage at which the plant is vegetative and before the stems elongate.	Fresh new growth Before heading out Before inflorescence emergence Immature Prebud stage Very immature Young
Late vegetative	Stage at which stems are beginning to elongate to just before blooming; first bud to first flowers.	Before bloom Bud stage Budding plants Heading to in bloom Heads just showing Jointing and boot (grasses) Prebloom Preflowering Stems elongated
Early bloom	Stage between initiation of bloom and stage in which 1/10 of the plants are in bloom; some grass heads are in anthesis.	Early anthesis First flower Headed out In head Up to 1/10 bloom
Mid-bloom	Stage in which 1/10 to 2/3 of the plants are in bloom; most grass heads are in anthesis.	Bloom Flowering Flowering plants Half bloom In bloom Mid anthesis
Full bloom	Stage in which 2/3 or more of the plants are in bloom.	3/4 to full bloom Late anthesis
Late bloom	Stage in which blossoms begin to dry and fall and seeds begin to form.	15 days after silking Before milk In bloom to early pod Late to past anthesis

Table 3. Stage of maturity terms used in the international feed names

Preferred term	Definition	Comparable terms
Milk stage	Stage in which seeds are well formed but soft and immature.	After anthesis Early seed Fruiting In tassel Late bloom to early seed Past bloom Pod stage Post anthesis Post bloom Seed developing Seed forming Soft Soft immature
Dough stage	Stage in which the seeds are of dough-like consistency.	Dough stage Nearly mature Seeds dough Seeds well developed Soft dent
Mature	Stage in which plants are normally harvested for seed.	Dent Dough to glazing Fruiting Fruiting plants In seed Kernels ripe Ripe seed
Post ripe	Stage that follows maturity; seeds are ripe and plants have been cast and weathering has taken place (applies mostly to range plants).	Late seed Over ripe Very mature
Stem cured	Stage in which plants are cured on the stem; seeds have been case and weathering has taken place (applies mostly to range plants).	Dormant Mature and weathered Seeds cast
Regrowth early vegetative	Stage in which regrowth occurs without flowering activity; vegetative crop aftermath; regrowth in stubble (applies primarily to fall regrowth in temperate climates); early dry season regrowth.	Vegetative recovery growth

Table 3. Stage of maturity terms used in the international feed names

Preferred term	Definition	Comparable terms
Regrowth late vegetative	Stage in which stems begin to elongate to just before blooming; first bud to first flowers; regrowth in stubble with stem elongation (applies primarily to fall regrowth in temperate climates).	Recovery growth Stems elongating Jointing and boot (grasses)
For Plants That Do Not Bloom[a]		
1 to 14 days' growth	A specified length of time after plants have started to grow.	2 weeks' growth
15 to 28 days' growth	A specified length of time after plants have started to grow.	4 weeks' growth
29 to 42 day's growth	A specified length of time after plants have started to grow.	6 weeks' growth
43 to 56 days' growth	A specified length of time after plants have started to grow.	8 weeks' growth
57 to 70 days' growth	A specified length of time after plants have started to grow.	10 weeks' growth

---

[a] These classes are for species that remain vegetative for long periods and apply primarily to the tropics. When the name of a feed is developed, the age classes form part of the name (e.g., Pangolagrass, 15 to 28 days' growth). Do not use terms which apply to plants that bloom and those which do not bloom in same name. For plants growing longer than 70 days, the interval is increased by increments of 14 days.

Table 4. Weight-unit conversion factors

Units given	Units wanted	For conversion multiply by	Units given	Units wanted	For conversion multiply by
lb	g	453.6	μg/kg	μg/lb	0.4536
lb	kg	0.4536	Mcal/kg	kcal	1,000.
oz	g	28.35	kcal/kg	kcal/lb	0.4536
kg	lb	2.2046	kcal/lb	kcal/kg	2.2046
kg	mg	1,000,000.	ppm	μg/g	1.
kg	g	1,000.	ppm	mg/kg	1.
g	mg	1,000.	ppm	mg/lb	0.4536
g	μg	1,000,000.	mg/kg	%	0.0001
mg	μg	1,000.	ppm	%	0.0001
mg/g	mg/lb	453.6	mg/g	%	0.1
mg/kg	mg/lb	0.4536	g/kg	%	0.1

Table 5. Weight equivalents

1 lb = 453.6 g = .4536 kg = 16 oz
1 oz = 28.35 g
1 kg = 1,000 g = 2.0246 lb
1 g = 1,000 mg
1 mg = 1,000 μg = .001 g
1 μg = .001 mg = .000001 g
1 μg per g or 1 mg per kg is equivalent to ppm

Locating Names in the Tables

To locate the international name of a feed in the tables, one must know the name of the parent material (e.g., the origin of the feed) and usually the variety or kind of parent material. The common name of the parent material is followed by the scientific name. (Example: Alfalfa. Medicago sativa.) Parent materials are of four types: plant, animal (other than fish and poultry), poultry, and fish. For a feed derived from a plant, the origin term is the name of the plant (e.g., Alfalfa, Barley, Oats), not the word "plant." For a feed derived from animals or poultry, the origin term is the name of the animal or bird (e.g., Cattle, Chicken, Crab, Horse, Sheep, Turkey, Whale). For a feed of fish origin, the origin term is "Fish" followed by the species or variety (e.g., Fish, cod; Fish, salmon).

When the specific origin of a feed derived from animals, poultry, or fish is not known, the origin term is "Animal," "Poultry," or "Fish."

Names having the same origin term are arranged in an order that depends on whether the names include reference to species, variety, or kind. Names that lack such references are arranged under the origin term as follows:

First: numerically, by classes

Second (within a class): alphabetically, by parts eaten, process(es), stage of maturity (in the order in which the stages occur), cutting and grade

Names that include references to species, variety or kind are arranged under the origin term as follows:

First: alphabetically, by species, variety, or kind

Second (within species, variety, or kind): numerically, by classes

Third (within a class): alphabetically, by parts eaten, process(es), stage of maturity (in the order in which the stages occur), cutting and grade

Names that lack references to species, variety, or kind are listed before names that include them.

Many feeds have names that were given to them by AAFCO, the Canada Feed Act (CFA), or the Canada Grain Act (CGA). In addition, some feeds have regional or local names. The reader will find these names under the international names.

A 6-digit International Feed Reference number is listed after the International Names and other names. The first digit is the class of the feed. The number may be used as the "numerical name" of a feed when calculating amounts of toxic materials in feeds or diets or when performing linear programming with electronic computers.

List of Parts of Plant, Animal or Feed Products

By looking up the definition of the part of the plant, animal or feed product (see page 56), it is possible to identify what the animal is eating. The following is a list of each part of each feed.

Note: This list includes all the "parts" in the file of International Feedstuffs Institute which are more than those included in the feed names in this report.

acorn hulls

acorn meats

acorns

aerial part

aerial part and fruit

aerial part and roots

aerial part w AIV preservative added

aerial part w AIV preservative and sugar added

aerial part w bacitracin preservative added

aerial part w barley grain added

aerial part w biosil added

aerial part w calcium carbonate added

aerial part w citrus pulp fines added

aerial part w corn ears grnd added

aerial part w corn grain added

aerial part w corn grain grnd added

aerial part w corn grits by-product added

aerial part w crowns

aerial part w formic acid added

aerial part w grain added

aerial part w heads
aerial part w hydrochloric acid preservative added
aerial part w lactic acid bacteria and dried whey added
aerial part w limestone preservative added
aerial part w molasses added

aerial part w molasses and acid added
aerial part w newspaper added
aerial part w nuts
aerial part w nuts w roots
aerial part w phosphoric acid preservative added

aerial part w phosphorus pentachloride preservative added
aerial part w pods
aerial part w pods w seeds
aerial part w potato flakes added
aerial part w pulp

aerial part w roots
aerial part w salt (NaCl) added
aerial part w seedballs
aerial part w sodium bisulfite preservative added
aerial part w sodium metabisulfite preservative added

aerial part w sugar added
aerial part w sulfur dioxide preservative added
aerial part w sulfur trioxide preservative added

aerial part w sulfuric acid preservative added

aerial part w 0.5% urea added

aerial part w 10% molasses added

aerial part w 12% urea added

aerial part w 175 kg corn ears grnd added per metric ton

aerial part w 2% molasses added

aerial part w 20 kg molasses added per metric ton

aerial part w 3% molasses added

aerial part w 4 kg sodium metabisulfite preservative added per metric ton

aerial part w 4% molasses added

aerial part w 5 kg zinc bacitracin preservative added per metric ton

aerial part w 50 kg corn added per metric ton

aerial part w 50 kg corn ears grnd added per metric ton

aerial part w 6 g zinc bacitracin preservative added per metric ton

aerial part w 6% molasses added

aerial part w 7.5% corn grain grnd added

aerial part w 8-10% molasses added

aerial part w 8% molasses added

aerial part wo ears

aerial part wo ears w husks

aerial part wo ears wo husks

aerial part wo grain

aerial part wo heads
aerial part wo pods
aerial part wo seeds
aerial part wo spines
aerial part stubble

bark
blood
blood albumin
blood w rumen contents
blubber oil

bolls
bolls process residue
bone ash
bone charcoal
bone glue residue

bone protein colloids
bones
brains
bran
bran w germ

bran w germ w broken grain w polishings
bran w germ w calcium carbonate added
bran w germ w hulls

brewers grains

browse

browse w seeds

browse w 10% molasses added

browse w 20% molasses added

buds

bulbs

butter

buttermilk

by-product

by-product w blood

by-product w blood w bone

by-product w bone

cannery residue

cannery residue w molasses added

capsule chaff

capsule chaff w molasses added

carcass

carcass residue

carcass residue mx 35% blood

carcass residue mx 5% blood

carcass residue mx 5% blood w bone

carcass residue w blood
carcass residue w blood w bone
carcass residue w blood w calcium carbonate added
carcass residue w blood w rumen contents
carcass residue w bone

carcass residue w bone mx 35% blood
carcass young birds
casein
center of leaves
cereal by-product

chaff
charcoal
cheese
cheese rind
chrysalis

cob fractions
cobs
cob furfural residue
cobs w husks
cones

cracklings
crowns
culled seeds

distillers grains
distillers grains w potato flakes added

distillers grains w solubles
distillers residue
distillers solubles
distillers stillage
ears

ears w husks
ears wo husks
egg shells
egg white
egg yolk

eggs w shells
eggs wo shells
elevator chaff and dust
endosperm
endosperm oil

entire animal
entire plant
entire plant w molasses added
fat
fat or oil

fatty acids ethyl ester
fatty acids methyl ester
fatty acids non-glyceride ester
feathers
feathers w viscera w feet w heads

feet
fermentation product wo glutamic acid
fermentation solubles
fiber
fiber by-product

fiber residue
fillets
flesh
flour
flour by-product

flour by-product mill run
flour by-product w palm oil added
flour by-product wo hulls
flower extract
flowers

flowers w leaves
flowers w seeds
fruit

fruit wo peelings
fruit wo peelings wo pits

fruit wo peelings wo seeds
fruit wo pits
fruit wo seeds
fungal amylase process distillers grains w solubles
germ

germ oil
germs
germs wo solubles
gin by-product
gizzards

glue by-product
gluten
gluten low glutamic acid
gluten w bran
graham flour

grain
grain clippings
grain distillers saccharomyces
grain fines
grain screenings

grain w blood meal added
grain w fat added
grain w hulls added
grain w 2.75% fish meal added
grain wo germs

grain wo starch
grits
grits by-product
groats
groats by-product

grounds
grounds w chicory residue
hair
hatchery by-product
hay

hay w enzyme added
hay w molasses added
hay w nuts
hay wo nuts
hay wo seeds

heads
heads wo grain
heads wo grain w molasses added

heads wo seeds
hearts

hemicellulose extract
honey
hull fines
huller by-product
hulls

hulls w germs
hulls wo lint
husks
husks w leaves
joints

joints wo spines
juice
kidneys
lactose
lard

leaves
leaves w flowers
leaves w petioles
leaves w pods w seeds
leaves w stems

leaves w top of aerial part
leaves w 5% molasses added
lecithin
lint
lips

litter
liver oil
liver oil w vitamins A and D added
liver w gland tissue
livers

lungs
malt
malt hulls
malt hulls w chaff
malt sprout cleanings

malt sprouts
manure
meat
meat w bone
meat w fat

meat w liquid
meat w shell
meat wo fat

meats

meats w molasses added

meats w shells

meats w skins

medium w yeast

milk

milk protein

mill dust

mill residue

molasses

molasses distillation solubles

molasses fermentation solubles

mucilage

necks w backs w wings w legs

needles

nuts

nuts w hulls

offal fat

oil

oil from cannery refuse

oil from whole or parts of fish

oil refinery lipid

pancreas
pearl by-product
peelings
peelings w juice
petioles

pith
pits
pods
pods w seeds
polished rice by-product

polishings
polishings w calcium carbonate added
pollen
process residue
process residue w lime added

protein
pulp
pulp fines
pulp w hulls
pulp w molasses

pulp w molasses added
pulp w molasses w sodium glutamate residue
pulp w potato flakes added

pulp w protein
pulp w sodium glutamate residue

pulp w spice added
pulp w steffens filtrate
pulp wo fines
pulp wo pectin
pulp wo peelings

raisin syrup by-product
refuse
root flour
root flour w 3% salt added
root peelings

roots
roots w alfalfa hay added
roots w corn grnd added
roots w leaves w some stems
roots w oat hay added

roots w peelings w stems
roots w stems
roots w 15% urea added
roots wo peelings
rounds

rumen contents
rumen contents w molasses added
salt w iodine added
scourings
screenings

seed flour
seed protein
seed residue wo starch w shells
seed screenings
seed skins

seed skins w molasses added
seedballs
seeds
seeds unscreened
seeds w added hulls

seeds w calcium carbonate added
seeds w hulls
seeds w lint
seeds w pods
seeds w some hulls

seeds w some hulls w lint
seeds w some hulls wo gossypol
seeds w 5% milk added

seeds wo endosperm

seeds wo hulls

seeds wo huhls wo lint

seeds wo lint

shells

shells w skins

shoots

silk

skin scrapings

skins

solubles w low potassium salts and glutamic acid

solv extd flakes w reduced protein and carbohydrate

spent residue liquid

spleens

split pea by-product

starch

starch by-product

steepwater solubles

stem butts

stems

stems w heads

stems w leaves w pods

stems w leaves w roots
stems w molasses added
stems w roots
stems w tassels
stems w 5% molasses added

stems wo spines
sterol
stickwater solubles
stickwater solubles precipitate
straw

straw pulp
straw w enzyme added
straw w molasses added
stubble
sugar

sulfite waste liquors
syrup
syrup by-product
tallow
tassels

thymus
tip of leaves
tongues

tongues w diaphragms w hearts w esophaguses w muscles
top of aerial part

top of aerial part w 0.3% molasses dehy w 0.3% urea w 0.3% stickwater solubles
top of stems
tripe
tubers
twigs

udders
veal leg
vinegar fermentation grains
viscera
viscera w feet

viscera w feet w heads
viscera w heads
whey
whey albumin
whey fermentation solubles

whey low lactose
whey w protein
whey wo albumin low lactose
whole
whole or cuttings

whole wo feathers

whole wo outside leaves

yeast fermentation grains

List of Process(es) and Treatment(s) Feeds Undergo Before They are Fed to Animals

By looking up the definition of each process (see glossary of process terms, page 71), it is possible to know how each feed was treated before it was fed to the animal. The following is a list of the process terms:

Note: This list includes all the "processes" in the file of International Feedstuffs Institute which are more than those included in the feed names in this report.

coarse sifted
collected from ground alcohol extd
collected from tree alcohol extd s-c
condensed
cooked

cooked precipitated at pH 4.5 dehy grnd
cooked solv extd grnd
cracked
cracked fine screened
cracked wo fines

crimped
cultured
cultured condensed
defluorinated grnd
dehy

dehy caked
dehy chopped
dehy chopped pelleted
dehy coarse grnd
dehy fertilized

dehy fine grnd
dehy flaked
dehy grnd
dehy grnd extn unspecified
dehy grnd pelleted

dehy grnd pelleted regrnd
dehy grnd sifted
dehy hydrolyzed
dehy pelleted
dehy screened

dehy solv extd grnd
deribbed
deribbed dehy grnd
dry milled
dry milled dehy

dry milled extn unspecified grnd
dry milled solv extd grnd
dry or wet rendered dehy grnd
dry rendered
dry rendered dehy

dry rendered dehy grnd
dry rendered grnd
dry rendered solv extd dehy grnd

enriched
ensiled

ensiled dehy
ensiled dehy pelleted
ensiled fertilized
ensiled molded
ensiled pit silo

ensiled rolled
ensiled shredded dehy
ensiled stack
ensiled trench silo
ensiled wo wilting

extn unspecified caked
extn unspecified coarse grnd
extn unspecified dehy grnd
extn unspecified fine grnd
extn unspecified grnd

extn unspecified steamed grnd
fan air dried
fan air dried chopped
fan air dried grnd
fan air dried grnd pelleted

fan air dried w heat
fan air dried w heat chopped
fan air dried w heat grnd
fan air dried w heat grnd pelleted
fermented condensed

fertilized
fine grnd
fine screened
fine sifted
flaked

flaked dehy
flaked toasted
freeze dehy
fresh
fresh chipped

fresh chopped
fresh chopped fertilized
fresh condensed
fresh etiolated
fresh fertilized

fresh grnd
fresh leached
fresh weathered

fresh wide planted
fresh wilted

fried
frozen
gelatinized
grnd
grnd boiled

grnd caked
grnd ensiled
grnd fertilized
heat and acid·precipitated dehy
heat hydrolyzed

heat processed flaked
heat processed grnd
heat processed grnd pelleted
hydrolyzed
hydrolyzed dehy

hydrolyzed dehy grnd
iodinated
irradiated w ultraviolet light
kibbled
lactase hydrolyzed condensed

lactase hydrolyzed dehy
maltase process dehy grnd
maltase processed
malted
mech extd

mech extd caked
mech extd chipped
mech extd dehy
mech extd dehy grnd
mech extd fine sifted

mech extd flaked
mech extd grnd
mech extd grnd pelleted
mech extd toasted grnd
mech extd grnd

milk acid precipitated dehy
partially aspirated gelatinized fine grnd
partially extd dehy grnd
partially extd grnd
pearled

polished
polished and broken
polished boiled

polished puffed
precipitated dehy
precipitated grnd

prepressed solv extd grnd
pressed ensiled
raw
raw dehy grnd
raw grnd

retort charred grnd
retort charred spent
roasted
rolled
s-c

s-c brown
s-c chopped
s-c chopped pelleted
s-c fertilized
s-c grnd

s-c grnd fertilized
s-c grnd pelleted
s-c grnd sifted
s-c irrigated
s-c on riders

s-c pelleted
s-c rained on
s-c wafered
s-c weathered
s-c weathered grnd

s-c weathered grnd pelleted
scoured
screened
shredded dehy
shredded wet

sifted
skimmed
skimmed centrifugal
skimmed condensed
skimmed cultured condensed

skimmed cultured dehy
skimmed dehy
smoked
soaked
soaked and s-c

solv extd
solv extd dehy
solv extd dehy grnd

solv extd flaked
solv extd grnd

solv extd grnd fine sifted
solv extd grnd pelleted
solv extd grnd sifted
solv extd toasted grnd
solv extd water extd

solv-extd grnd
spent dehy
spray dehy
steam rendered
steamed

steamed dehy
steamed dehy grnd
steamed ensiled
steamed solv extd dehy grnd
steffens

tanned wet rendered dehy grnd
thermally expanded granulated
toasted
toasted grnd
toxicity extd grnd

toxicity extd grnd caked
treated w calcium hydroxide
treated w hydrochloric acid dehy
treated w lime mech extd grnd caked
treated w sodium bicarbonate dehy

treated w sodium hydroxide
treated w sodium hydroxide dehy
treated w sodium hydroxide dehy crushed
treated w sodium hydroxide s-c grnd sifted
treated w sodium hydroxide wet

treated w sodium sulfide dehy
uncleaned
vacuum dehy
washed chopped dehy
washed ensiled

water extd dehy grnd
weathered
wet
wet milled
wet milled dehy

wet milled dehy grnd
wet milled mech extd dehy grnd
wet milled solv extd dehy grnd

wet milled solv extd dehy grnd

wet or dry milled dehy

wet pressed

wilted

wilted ensiled

wilted ensiled fertilized

Glossary of Miscellaneous
Feed and Nutrition Terms

additive An ingredient or combination of ingredients added, usually in minute quantities, to the basic feed mix or parts thereof, to fulfill a specific need. See *feed additive concentrate, feed additive supplement, feed additive premix, food additive.*

antibiotic A drug synthesized by microorganisms and having the power (in proper concentration) to inhibit the growth of other microorganisms.

apparent digestible energy (DE) Food intake gross energy minus fecal energy. Syn: *apparent absorbed energy, energy of apparently digested food.* See *GE digestion coefficient.*

DE =(GE of food per unit dry wt x dry wt of food)–
(GE of feces per unit dry wt x dry wt of feces)

as fed See *dry matter content of feed samples.*

balanced Containing nutrients in amounts and proportions that fulfill physiological needs of animals as specified by recognized authorities in animal nutrition. The species for which the feed or ration is intended, and its functions, such as maintenance or maintenance plus production (growth, fetus, fat, milk, eggs, wool, feathers, or work) shall be specific.

biscuit Shaped and baked dough.

block Agglomerated feed compressed into a solid mass usually weighing 30 to 50 pounds and cohesive enough to hold its form. See *brick, pellets*

brand name Defined by the Association of American Feed Control Officials as "any work, name symbol or device or any combination thereof, identifying the commercial feed of a distributor and distinguishing it from that of others."

brick Agglomerated feed compressed into a solid mass weighing less than 2 pounds and cohesive enough to hold its form.

cake The mass that results from pressing seeds, meat, or fish to remove oils, fats, or other liquids.

calorie (cal) The unit for measuring chemical energy. It is defined as the amount of heat required to raise the temperature of 1 gram of water from 14.5° to 15.5° C at standard pressure. One thousand calories is designated as 1 kilocalorie (kcal) (kilocalorie is preferred to Calorie spelled with a large "c" because of the confusion with a small calorie spelled with a small "c"); 1 million calories as 1 megacalorie (Mcal). One calorie is equivalent to 4.184 joules (J), which is the unit of electrical energy defined as 10^7 ergs or, practically, the energy expended on 1 second by an electric current of 1 ampere in a resistance of 1 ohm. The standard calorie used for expressing the chemical energy in feeds and metabolic processes is based on the heat of combustion of benzoic acid, which has been precisely determined to be 771.36 ± 0.03 kcal/mole.

commercial feed Defined in the Uniform Feed Bill (an Act) of the Association of American Feed Control Officials as follows:

> The term "commercial feed" means all materials which are distributed for use as feed or for mixing in feed, for animals other than man except:
>
> (1) Option A - Unmixed seed, whole or processed, made directly from the entire seed which are not adulterated within the meaning of Section 7 of this Act.
>
> Option B - Unmixed unprocessed whole seeds which are not adulterated within the meaning of Section 7 of this Act.
>
> (2) Hay, straw, stover, silage, cobs, husks and hulls
> (i) when unground, and
> (ii) when unmixed with other materials.
>
> (3) Individual chemical compounds when not mixed with other materials which are by regulation exempted.

complete feed A nutritionally adequate feed for a specific animal in a specific physiological state. It is compounded to be fed as the sole diet and is capable of maintaining life or promoting production (or both) without the consumption of any additional substance except water.

concentrate A feed used with another to improve the nutritive balance of the total and intended to be diluted and mixed to produce a supplement or a complete feed.

corn See *maize* (International term).

crumbles Pelleted feed reduced to granular form with corrugated rollers.

cubes See *pellets, range cubes.*

cull Material rejected, in grading or separating, as inferior.

culture Nutrient medium bearing a colony of specific microorganisms.

customer-formula feed A commercial feed whose components are mixed according to the specific instructions of the final purchaser or contract feeder.

dextrose equivalent A measurement of the reducing power of sugars and starch hydrolyzates calculated as dextrose. The equivalent is expressed as a percentage of the dry substance.

diet The feed and water regularly offered to or consumed by an animal.

digestible energy See *apparent digestible energy.*

diluent An edible substance that is mixed with a nutrient or additive to reduce its concentration and thereby make it more acceptable to animals, safer to use, or more amenable to being mixed uniformly in a feed. A diluent may also be a carrier.

drug Defined by the U.S. Food and Drug Administration as follows:

> A substance (a) intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals or (b) a substance other than food intended to affect the structure or any function of the body of man or other animals.

dry See *dry matter content of feed samples*

dry matter content of feed samples The dry matter content of feed samples and other materials is expressed on three dry matter bases: *as fed; partially dry;* and *dry.* Definitions of these terms follow:

as fed As fed refers to the feed as it is consumed by the animal; the term "as collected" is used for materials which are not usually fed to the animal, i.e., urine, feces, etc. If the analyses on a sample are affected by partial drying, the analyses are made on the "as fed" or "as collected" sample. Similar terms: *air dry*, i.e., hay; *as received; fresh; green; wet*

partially dry Partially dry refers to a sample of "as fed" or "as collected" material that has been dried in an oven (usually with forced air) at a temperature usually at 60° C or freeze dried and has been equilibrated with the air; the sample after these processes would usually contain more than 88% dry matter (12% moisture); some materials are prepared in this way so they may be sampled, chemically analyzed and stored. This analysis is referred to as "partial dry matter % of 'as fed' or 'as collected' sample." The partially dry sample must be analyzed for dry matter (determined in an oven at 105° C) to correct subsequent chemical analyses of the sample to a "dry" basis. This analysis is referred to as "dry matter % of partial dry sample." Similar term: *air dry* (sometimes air dry is used for "as fed"; see *as fed*.

dry Dry refers to a sample of material that has been dried at 105° C until all the moisture has been removed. Similar terms, *100% dry matter; moisture free*. If dry matter (in an oven at 105° C) is determined on an "as fed" sample, it is referred to as "dry matter of as fed sample." If dry matter is determined on a partial dry sample it is referred to as "dry matter of partial dry sample." It is recommented that analyses be reported on the "dry" basis (100% dry matter or moisture free), and in addition the "as fed dry matter" should be reported.

emulsifier A material that lowers the surface tension of the system to which it is added.

external marker See *indicator, external.*

fecal markers See *indicators;* See *marker, fecal.*

feed(s) Material(s) consumed by animals that contribute energy and nutrients (or both) to the diet.

feed additive concentrate Defined by the U. S. Feed and Drug Administration as follows:

> An article intended to be further diluted to produce a complete feed or feed additive supplement and is not suitable for offering as a supplement or for offering free choice without dilution. It contains, among other things, one or more additives in amounts in a suitable feed base such that from 100 to 1000 pounds of concentrate must be diluted to produce 1 ton of a complete feed. A "feed additive concentrate" is unsafe if fed free choice or as a supplement because of danger to the health of the animal or because of the production of residues in the edible products from food producing animals in excess of the safe levels established.

feed additive premix Defined by the U. S. Food and Drug Administration as follows:

> An article that must be diluted for safe use in a feed additive concentrate, a feed additive supplement or a complete feed. It contains, among other things, one or more additives in high concentration in a suitable feed base such that up to 100 pounds must be diluted to produce 1 ton of a complete feed. A feed additive premix contains additives at levels for which safety to the animal has not been demonstrated and/or which may result when fed undiluted in residues in the edible products from food producing animals in excess of the safe levels established.

feed additive supplement Defined by the U. S. Food and Drug Administration as follows:

> An article for the diet of an animal which contains one or more food additives and is intended to be:
>
> (1) Further diluted and mixed to produce a complete feed; or
> (2) Fed undiluted as a supplement to other feeds; or
> (3) Offered free choice with other parts of the ration separately available.
>
> A "feed additive supplement" is safe for the animal and will not produce unsafe residues in the edible products from food producing animals if fed according to directions.

feed grade Suitable for animal, but not human, consumption.

feed mixture See *formula feed.*

fines Material that passes through a screen whose openings are smaller than the specified minimum size of crumbles, pellets, or substances such as citrus pulp.

food additive Defined by the U. S. Food and Drug Administration as follows:

> Any substance which becomes a component of or affects the characteristics of a feed or food if such substance is not generally recognized among experts qualified by scientific training and experience to evaluate its safety as having been adequately shown through scientific procedures to be safe under the conditions of its intended use. Excepted are substances having "prior sanction" and pesticide chemicals under certain conditions.

food grade Suitable for human consumption.

forage Aerial plant material, primarily grasses and legumes containing more than 18% crude fiber on a dry basis, used as animal feed. The term usually refers only to plant materials as pasture, hay silage, and green chopped feeds.

formula feed Feed consisting of two or more ingredients proportioned, mixed and processed according to the manufacturer's specifications.

free choice A feeding system in which animals are given unlimited access to the separate feeds or mixtures of feeds constituting the diet.

fresh Recently produced or gathered; not stored, cured, or preserved.

fungal amylase process distillers grains with solubles The solid residue resulting from combining distillers grains and solubles and drying after hydrolysis of the starch by fungal amylase.

gross energy (GE) The amount of heat that is released when a substance is completely oxidized in a bomb calorimeter containing 25 to 30 atmospheres of oxygen. Syn: *heat of combustion.*

gross energy digestion coefficient The percentage of gross energy apparently absorbed.

GE digestion coefficient =

$$\frac{\text{(GE of food per unit dry wt} \times \text{dry wt of food} - \text{(GE of feces per unit dry wt} \times \text{dry wt of feces)}}{\text{GE of food per unit dry wt} \times \text{dry wt of food}} \times 100$$

indicator, external Substances which are added to the diet or taken orally and are minimally absorbed from the alimentary tract and may be virtually completely recovered unchanged in the feces (e.g., chromic oxide, ferric oxide, dyes, radioactive materials). They are used to estimate fecal output or dry matter intake. Syn: *external marker.*

indicator, internal Substances which occur naturally in the diet are minimally absorbed from the alimentary tract and may be virtually completely recovered unchanged in the feces (e.g., lignin, chromogen, fecal nitrogen, silica, the acid soluble fecal fraction, and methoxyl and fiber). They are used to estimate apparent digestibility and dry matter intake. Syn: *external marker.*

indicator, urinary A substance which is completely absorbed from the alimentary tract and recovered in the urine.

internal marker See *indicator, internal.*

joule (J) The International Organization for Standardization defines 1 joule as "the work done when the point of application of a force of one newton (N) is displaced through a distance of one meter (m) in the direction of the force." One calorie is equal to 4.184 joules. See *calorie.*

kilocalorie (kcal) One thousand small calories. This term is preferable to large Calorie. See *calorie.*

marker, fecal A substance used to color or mark the ration so the feces produced from the ration may be collected quantitatively (e.g., iron oxide or carmine). See *indicator, external.*

mash A mixture of ingredients in meal form. Syn: *mash feed.*

meal An ingredient(s) that has been ground or otherwise reduced to a particle size somewhat larger than flour, unbolted.

megacalorie (Mcal) One million small calories. See *calorie.*

metabolizable energy (ME) Food intake gross energy, minus fecal energy, minus energy in the gaseous products of digestion, minus urinary energy.

micro-ingredients Vitamins, minerals, antibiotics, drugs, and other materials normally required in small amounts and measured in milligrams, or parts per million.

net energy (NE) The difference between metabolizable energy and heat increment. It includes the amount of energy used for maintenance only or for maintenance plus production. Net energy can also be defined as the gross energy of the gain in tissue or of the products synthesized plus the energy required for maintenance. Below the critical temperature, net energy includes part or all of the heat increment. Reports on net energy should clearly state which functions are included. Subscripts are suggested. For example, there may be values for net energy for maintenance plus production (NE_{m+p}), net energy for maintenance only (NE_m), or net energy for production only (NE_p).

net energy for maintenance (NE_m) The part of net energy expended to keep an animal in energy equilibrium. When an animal is in this state, there is no net gain or loss of energy in the body tissues. The net energy for maintenance for a producing animal may be different from that for a nonproducing animal of the same weight. The difference is due to changes in amounts of hormones produced and to differences in voluntary activity.

This difference may be charged to maintenance, but in practice it is usually charged to the production requirement.

net energy for production (NE_p) The part of net energy, in addition to that needed for body maintenance, that is used for work or for tissue gain (growth or fat production or both), or for the synthesis of, for example, a fetus, milk, eggs or wool. It should always be clearly stated which production fractions are included. For example, there could be: NE_{egg}; NE_{gain}; NE_{milk}; NE_{preg}; NE_{wool}; or NE_{work}.

nitrogen equilibrium metabolizable energy (ME_n) Food intake gross energy minus fecal energy, minus energy in the gaseous products of digestion, minus urinary energy, corrected for nitrogen retained or lost from the body. For birds and monograstric mammals, the gaseous products of digestion do not need to be considered. For mammals the correction is made as follows: for each gram of nitrogen lost from the body (equal to negative nitrogen balance) 7.45 kcal are added (correction+) to the metabolizable energy and for each gram of nitrogen retained in the body equal to positive nitrogen balance 7.45 kcal are subtracted (correction+) from the metabolizable energy. As this value was obtained with dogs, it may not be entirely correct for other animals. In the case of animals synthesizing products such as milk or eggs, no correction is made for the nitrogen in those products. Similar term: *katabolizable energy*

$$ME_n = GE_i - FE - UE - GPD \pm \text{correction+}$$

For birds, the preferable factor is 8.73 kcal because it represents the average gross energy of urine not contaminated with feces.

orts The feed which is not consumed when an animal is on a feeding, digestion or balance trial. Syn: *weighback*.

pellets Agglomerated feed formed by compacting and forcing feed through die openings by a mechanical process. Syn: *pelleted feeds, hard pellet.* *Soft pellets* are those containing sufficient liquid to require immediate dusting and cooling. Syn: *high molasses pellets.* See *block, brick.*

pit silo A below-ground bin sealed when full to exclude air and used for storing silage.

premix A uniform mixture consisting of one or more micro-ingredients and a diluent or carrier (or both) and used to facilitate uniform distribution of the micro-ingredients within a larger mixture.

presswater Aqueous extract obtained from fish or meat by hydraulic pressing of the fish or meat followed by removal of fat or oil (or both), usually by centrifuging.

range cake Cake fed on the range, usually on the ground (e.g., cottonseed cake). See *cake.*

range cubes Large pellets intended to be fed on the ground. Syn: *range wafers.*

range wafer See *range cubes.*

ration The total amount of feed (diet) allotted to one animal for a 24-hour period.

roughage Plant material, primarily by-products of crop production, high in crude fiber, low in digestibility and low in protein. Examples are: straw, stover, bagasse, peanut and oat hulls, and maize (corn) cobs.

scratch grain Whole, cracked, or coarsely cut grain. Syn: *scratch feed.*

self-fed Provided on a continuous basis. Refors to a component of a diet or to mixed components. Self-feeding enables animals to eat at will.

supplement A feed used with another to improve nutritive balance of performance. It may be fed undiluted as a supplement to other feeds, offered free choice with other parts of the diet separately available, or mixed with other feed ingredients to produce a complete feed.

titer The solidification point (determined by heating or cooling) of the fatty acids liberated from a fat by hydrolysis.

trace mineral Mineral nutrient required by animals in very small amounts.

trench silo A trench that is filled with fresh forage and then sealed to exclude air and permit the formation of silage.

urinary indicator See *indicator, urinary.*

vitamins Organic compounds that function as parts of enzyme systems that are essential for transmitting energy and regulating metabolism.

weighback The feed which is not consumed when an animal is on a feeding, digestion or balance trial. Syn: *orts.*

Glossary of Part Terms Used in International Feed Names

aerial part The above-ground part of a plant.

AIV preservative A preservative for silage consisting of a mixture of hydrochloric and sulfuric acids.

ash Mineral residue remaining after the burning of combustible material.

bagasse Pulp from sugar cane. International term: pulp.

beans Seeds of legumimous plants especially of the genera Phaseolus, Dalichols, and Vigna.

bisulfite preservative An acid sulfite used to prevent decomposition of stored products.

blood albumin One of the blood proteins.

blowings See mill dust (International term).

bolls The pods or capsules of certain plants (e.g., flax and cotton).

bolls process residue The residue from immature and unopened cotton bolls after removal of fiber and seed.

bone ash The white porous residue that remains after burning bones in air.

bone charcoal The product obtained by charring bones in a closed retort.

bone glue residue Part of bone remaining (chiefly calcium phosphate) after removal of the part used in manufacturing bone glue.

bone phosphate The residue of bones that have been treated first in caustic solution, then in hydrochloric acid solution, and thereafter precipitated with lime and dried.

bone protein colloids The gelatinous material extracted from bones by moist heat treatment.

bran Pericarp of grain.

brewers' grains The coarse insoluble residue from brewed malt

browse Small stems, leaves, flowers, and fruits of shurbs, trees or woody vines.

bud Small lateral or terminal protuberance on a plant stem. It consists of rudimentary foliage or floral levels or both overarching a growing point on an undeveloped shoot.

bulb Mass of overlapping membranous or fleshy leaves on a short stem-base enclosing one or more buds that may develop into a new plant.

cannery residue Edible residue that remains after a product is prepared for canning.

capsule chaff The light fibrous material obtained by aspiration of flaxseed or flaxseed capsules.

carcass The body of an animal exclusive of the intestinal tract and lung tissue. (if head and skin are included, the term *carcass with head and skin* is used; if head and skin are not included, the term is *carcass without head and skin).*

carcass meat trimmings Soft tissues obtained from slaughtered animals. The tissues consist chiefly of striate, skeletal, and cardiac muscles, but they may include the accompanying fat, skin, sinew, nerve, and blood vessels.

carcass residue, mammals Residue from carcasses exclusive of hair, hoofs, horns, and contents of the digestive tract. (If bones are included, the term *carcass residue with bones* is used).

carrier An edible material (e.g., soybean meal) to which ingredients (e.g., vitamin A or riboflavin) are added. The added ingredients are absorbed impregnated, or coated into or onto the edible material.

casein The protein precipitate that results from treating skim milk with acid or rennet.

cereal by-product Secondary product resulting from the manufacture of a table cereal.

chaff Glumes, hulls, joints, and small fragments of straw that are separated from seed in threshing or processing.

chaff and dust Defined by the Association of American Feed Control Officials as material

> . . . separated from grains or seeds in the usual commercial cleaning processes. It may include hulls, joints, straw, mill or elevator dust, sweepings, sand, dirt, grains, seeds. It must be labeled "chaff and/or dust." If it contains more than 15% ash the words "sand" and "dirt" must appear on the label.

See *screenings*.

charcoal Dark porous forms of carbon made by incomplete combustion of plant or animal matter.

cleanings Chaff, weed seeds, dust, and other foreign matter removed from cereal grains.

cob fractions A mixture containing rings, or disks, cut from corn (maize) cobs and all or some of the following: glumes, lemmas, paleae, and sterile florets.

cobs The fibrous inner portions of the ears of corn (maize) from which the kernels have been removed.

cobs furfural residue The residue from extraction of furfurals from corn (maize) cobs.

cobs with grain See *ears* (International term).

cobs with husks Corn (maize) cobs with the enveloping husks but without the grain.

cones Ovule or pollen-bearing scales from trees of the pine family.

cracklings The residue that remains after removal (by dry heat) of fat from adipose tissue or skin of animals.

crown On a seed plant, the point (usually at ground level) at which stems and root merge.

cuttings Parts or sections of a plant or animal.

distillers grains Grains from which alcohol or alcoholic beverages have been distilled.

distillers residue See *stillage* (International term).

distillers solubles Stillage filtrate.

distillers stillage See *stillage* (International term).

dust Fine dry particles of matter usually resulting from the cleaning or grinding of grain or other feedstuff.

ears Fruiting heads of corn, including cobs and grain but not the husks. Syn: *cobs with grain.*

egg albumen Whites of birds' eggs.

egg shells The hard exterior coverings of eggs of birds.

egg white The white of eggs from birds used separately from the yolk.

egg yolk Inner yellow-colored portion of the egg of birds.

elevator chaff and dust Particles that accumulate in dust collectors above elevators used for grain storage.

endosperm oil Oil obtained from endosperms.

entire plant The whole plant, including the roots.

fat A substance, solid or plastic at room temperature, composed chiefly of triglycerides of fatty acids.

fatty acids Aliphatic monobasic organic acids containing only the elements carbon, hydrogen, and oxygen.

fatty acids ethyl Saturated aliphatic monocarboxylic acids occurring naturally in fats, waxes, and essential oils in the form of ethyl ester, which is a class of compounds that yield ethyl alcohol on hydrolysis.

fatty acids methyl ester Saturated aliphatic monocarboxylic acids occurring naturally in fats, waxes, and essential oils in the form of esters other than those of glycerol.

fatty acids nonglyceride ester Saturated aliphatic monocarboxylic acids occurring naturally in fats, waxes, and essential oils in the form of esters other than those of glycerol.

fermentation product Product formed by enzymatic transformation of organic substrates.

fermentation solubles Parts of stillage that pass through screens, consisting chiefly of water, water-soluble substances, and fine particles from the fermentation process.

fiber An elongate tapering plant cell that has at maturity no protoplasm. It is found chiefly in the vascular tissues of plants, but may occur in other sites.

fiber by-product A secondary product obtained during the manufacture of a fiber product (e.g., flax fiber by-product, which is obtained during the manufacture of flax.)

fish stickwater An aqueous oil-free extract of cooked fish. It contains the aqueous cell solutions of the fish and any water used in processing.

flour Soft, finely ground bolted meal obtained by milling cereal grains and other seeds. It consists essentially of the starch and gluten of the endosperm.

flour by-product A secondary product obtained during the milling of grain for preparation of bread flour.

flower extract Material removed from flowers by leaching with a liquid.

fodder Green or cured plants (e.g., corn and sorghum) that are fed in their entirety, except for the roots, as forage. See *aerial part* (International term.

germ Embryo of a seed.

germ oil Oil extracted from the germ of cereal grains or other seeds.

gin by-product Material that remains after cotton fibers and seeds of cotton bolls are separated in ginning.

gizzard The second stomach of a bird; it has thick muscular walls and a tough lining for grinding food that has been partially digested in the crop.

gland tissue An aggregate of cells of various special secreting organs with their intercellular contents.

glue by-product A secondary product obtained in manufacturing glue.

gluten The tough, viscid, nitrogenous substance that remains after the flour of wheat or other grain has been washed to remove the starch.

gluten low glutamic acid Gluten from which some of the glutamic acid has been removed.

gossypol A phenolic pigment in cottonseed that is toxic to some animals.

graham flour Whole wheat flour; often a mixture of flour and bran.

grain Seed from cereal plants.

grain clippings The hulls, fragments of groats, immature grains, and chaffy material obtained during the dehulling of oats and other cereal grains.

grain distillers saccharomyces A genus of unicellular yeasts, which are fungi having little or no mycelial growth, reproducing asexually by budding and typically producing alcoholic fermentations on carbohydrate substrates.

grain fines Small particles screened from cracked grain.

grain screenings Defined by the Association of American Feed Control Officials as material obtained from screening grains and which

> . . . consists of 70% or more of grains, including light and broken grains, wild buckwheat, and wild oats. It must contain not more than 6.5% ash.

See *screenings*.

grease Animal fats with a titer below 40° C.

grits Coarse ground grain from which the bran and germ have been removed.

groat Grain from which the hulls have been removed.

grounds with chicory residue Sediment (e.g., coffee grounds) that contains chicory residue.

hatchery by-product A mixture of eggshells, unhatched eggs, and culled chicks that has been cooked, dehydrated, and ground, with or without partial removal of fat.

hay The aerial parts of grass or herbage cut and cured for animal feeding.

heads The parts of a plant that contain the seeds (e.g., sorghum heads).

heads without seeds Heads from which the seeds have been removed.

hulls Outer covering of seeds.

husks (1) Leaves enveloping an ear of corn; (2) Outer coverings of kernels or seeds, especially when dry and membranous (e.g., almond husks).

joints Nodes of plant stems.

juice The aqueous substance obtained from biological tissue by pressing or filtering, with or without addition of water.

kernel In cereals, a whole grain; in other species, a dehulled seed.

lactic acid bacteria Any of various bacteria (chiefly of the genera Lactobacillus and Streptococcus) that produce predominantly lactic fermentation of suitable media.

lactose A white crystalline disaccharide found in milk.

lard Rendered fat of swine.

lecithin A specific phospholipid; the principal constituent of crude phosphatides derived from oil-bearing seeds.

lint A fibrous coat of thickened convoluted hairs on the seeds of cotton plants.

litter Fibrous material used on the floor of poultry houses, with the poultry excreta.

low oil Containing very little oil (usually 5% or less).

malt Sprouted and steamed whole grain from which the radicle has been removed.

malt hulls Product consisting almost entirely of hulls and obtained from cleaning malted barley.

malt sprout cleanings with hulls Product obtained in cleaning malted barley or in recleaning malt. (Contains less protein than malt sprouts with hulls).

malt sprouts with hulls Sprouts from malted barley combined with malt hulls.

marc Pulp, seeds, and skins from grapes. See *pulp* (International term).

meat Flesh obtained from slaughtered mammals. (The term includes skeletal muscles, cardiac muscle, and the tongue, diaphragm, and esophagus; it sometimes includes the accompanying fat, skin, sinews, nerves, and blod vessels; it does not include the lips, snout and ears).

meat stickwater An aqueous fat-free extract of meat. (It is obtained in wet rendering meat products and contains the aqueous cell solutions, the soluble glue proteins, and water condensed from the steam used in wet rendering).

meats See *nut meats*.

meats with hulls Certain nut meats (e.g., those of peanuts) combined with their hulls.

media Nutrient substrate for culturing bacteria (or other organisms) or cells.

medicated feed (1) A feed that contains drug ingredients intended a) to cure, mitigate, treat, or prevent diseases of animals other than man; or b) to affect the structure of functioning of the bodies of animals other than man. (2) A feed that contains an antibiotic intended to promote growth or increase feed efficiency.

medium with yeast Cells of yeast combined with (1) the liquor containing the medium in which the cells grow and (2) the by-products of the cell metabolism.

middlings A by-product of flour milling that contains varying proportions of endosperm, bran, and germ.

milk albumin The coagulated protein fraction from whey.

mill dust Fine feed particles resulting from handling and processing feed and feed ingredients.

mill run A product as it comes from the mill, ungraded and usually uninspected.

mill residue Part of a feed or feed ingredient that remains after a milling process.

mixed screenings Defined by the Association of American Feed Control Officials as a mixture of material obtained from screenings grains and of the screenings that are

> . . . excluded from the preceding definition (grain screenings). It must contain not more than 27% crude fiber and not more than 15% ash.

See *screenings; grain screenings.*

molasses The thick viscous by-product resulting from the manufacture of refined sugar.

molasses distillers solubles Liquid containing dissolved substances obtained from molasses stillage.

molasses fermentation solubles That portion of molasses stillage which passes through screens, being composed mostly of water, water-soluble substances, and the particles of the grain.

needles Slender pointed leaves, as of pine, spruce, and larch.

nodes The joints of a stem; the point of insertion of a leaf or leaves.

nuts with shells Dry indehiscent fruit having a hard bony ovary wall.

nuts with shells with husks Dry indehiscent fruit having a hard bony wall enclosed by a dry outer covering (e.g., almonds).

nut meats Nuts from which the shells have been removed.

offal Low-grade residue left from the milling of some product.

oil A substance that consists chiefly of triglycerides of fatty acids and is liquid at room temperature.

oil refinery lipid By-product obtained in refining an edible oil.

paunch contents See *rumen contents* (International term).

pasture Grass or other plants grown for grazing animals; herbage.

pearl by-product By-product obtained in pearling barley. See *pearled.*

pectin Any of the group of colorless amorphous methylated pectic substances occurring in plant tissues or obtained by restricted treatment of protopectin obtained from fruits or succulent vegetables, that yield viscous solutions with water and when combined with acid and sugar yield a gel.

peel See *skin* (International term).

peelings Outer layers of fruits or vegetables that have been removed.

pith Continuous central strand of parenchymatous tissue occurring in the stems of most vascular plants.

pits Stones of drupacous fruits.

pod A dehiscent seed vessel or fruit (e.g., pea or bean pod).

polished rice by-product Another product produced during the preparation of polished rice.

polishings A by-product of rice consisting of the fine residue that accumulates as the rice kernels are polished (after hulls and bran have been removed).

pollen A mass of microspores (usually resembling a fine dust) in a seed plant.

pomace Pulp, seeds, and stems from fruit. See *pulp* (International term).

potassium salts A mineral compound containing potassium.

process by-product One or more by-products from food manufacturers.

process residue Material remaining after some of the constituents of the original material (e.g., pineapple slices for canning) have been removed in a manufacturing process.

protein Any of a large class of naturally occuring complex combinations of amino acids.

pulp The solid residue (including seeds and skins, if present) remaining after extraction of juices from fruits, roots, or stems. Syn: *bagasse, pomace, marc.*

pulp fines See *fines.*

raisin syrup by-product Residue from the manufacture of raisin syrup.

refuse Damaged, defective, or excess edible material produced during or left over from a manufacturing or industrial process.

rumen contents Contents of the first two compartments of the stomach of a ruminant. Syn: *paunch contents*

screenings Defined by the Association of American Feed Control Officials as material

> . . . obtained in the cleaning of grains which are included in the United States Grain Standard Act and other agricultural seeds. It may include light and broken grains and agricultural seeds, weed seeds, hulls, chaff, joints, straw, elevator or mill dust, sand, and dirt. It must be designated as Grain Screenings, Mixed Screenings, and Chaff and/or Dust. No grade of screenings must contain any seeds or other material in amount that is either injurious to animals or will impart an objectionable odor or flavor to their milk or flesh. The screenings must contain not more than four whole prohibited noxious weed seeds per pound and must contain not more than 100 whole restricted noxious weed seeds per pound. The prohibited and restricted noxious weed seeds must be those named as such by the seed control law of the state in which the screenings are sold or used. See *chaff and dust, grain screenings, mixed screenings.*

seed The fertilized and ripened ovule of a plant.

seedballs Rounded and usually dry or capsular fruits (e.g., potato seed).

seed skins Outer layers of some seeds (e.g., beans and peas).

shells The hard fibrous or calcareous covering of a plant or animal product, i.e., nut, egg, oyster.

shoots The immature aerial parts of plants.

shorts A by-product of flour milling that consists of germ, offal, fine particles of bran, and small amounts of flour.

silk The styles on an ear of corn.

skin (1) The outer covering of a fruit or seed. Syn: *rind, husk, peel.* (2) The dermal tissue of animals.

skin scrapings Scrapings from hides of slaughtered animals.

solubles Dissolved substances (and possibly fine solids) in liquids obtained in processing animal or plant materials.

solubles with low potassium salts and glutamic acid The residue from manufacturing monosodium glutamate from Steffen's filtrate.

solvent extracted flakes with reduced protein and carbohydrate The product remaining after some of the protein and nitrogen-free extract have been removed from dehulled, solvent extracted soybean flakes.

spent residue liquid The liquid residue that remains after extracting starch from potatoes.

spice Any of various aromatic vegetable products used to season foods.

spine A specialized, stiff sharp-pointed leaf form.

split pea by-product The residue from the manufacture of split peas, consisting primarily of skins and broken and rejected peas.

stalk The main stem of an herbaceous plant.

starch A white granular polymer of plant origin. The principal part of seed endosperm.

starch by-product The residue from the manufacture of starch (e.g., starch from potatoes).

steepwater Water containing soluble materials removed by steep extraction. *See steep extracted.*

Steffen's filtrate The filtrate obtained from the precipitation of calcium sucrate in the Steffen process and used chiefly as a source of amino acids.

stem butts Proximal ends of stems.

stems The coarse aerial parts of plants which serve as supporting structures for leaves, buds, and fruit.

sterols Solid cyclic alcohols that are the major constituents of the unsaponifiable part of animal and vegetable fats and oils.

stick Condensed stickwater or presswater. See *fish stickwater, meat stickwater, presswater.*

stickwater See *fish stickwater, meat stickwater.*

stickwater solubles Water-soluble fraction from fish from which the liquid, originally obtained by steam cooking and pressing the fish, has been removed.

stickwater solubles precipitated Precipitated water-soluble fraction from fish stickwater.

stillage The mash from fermentation of grains or molasses after removal of alcohol by distillation.

stover Stalks and leaves of corn or sorghum after the ears of corn or heads of sorghum have been harvested. International terms: *aerial part without ears without husks, aerial part without heads.*

straw Plant residue remaining after separation of the seeds (grain, peas, or beans) by threshing. See *threshed.*

straw pulp A moist slightly cohering mass consisting of ground straw treated with water.

stubble The lower parts of plant stems that remain standing in the field after harvest.

sulfite waste liquors Residues from products (e.g., wood pulp) treated with sulfite.

sugar A sweet crystallizable substance that consists essentially of sucrose (as used in describing feeds) that occurs naturally in the most readily available amounts in sugarcane, sugar beet, sugar maple, sorthum and sugar palm.

syrup Concentrated juice of a fruit or plant.

syrup by-product A secondary product consisting chiefly of the fatty fraction of corn starch together with protein and residual carbohydrates. Syn: *corn syrup refinery insolubles.*

tallow Animal fats with titer above 40° C.

tankage See *carcass residue with blood* (International term).

tassels Male inflorescences of some plants (e.g., the tassels at the end of a stalk of corn).

tops The uppermost parts of plants (e.g., sugar cane tops). See *aerial parts.*

tubers Short thickened fleshy stems, or rhizomes, that usually form underground and bear minute scaled leaves, each with a bud capable of developing into a new plant (e.g., potato).

unsaponifiable matter Ether soluble material extractable after complete reaction with strong alkali.

urea A highly soluble crystalline white compound used as a source of nonprotein nitrogen for ruminants. It is produced by mammals during nitrogen metabolism, and also synthetically.

vinegar fermentation grains Grains used as the substrate to provide a source of carbohydrate that is transformed into vinegar.

vine hay Cut and sun-cured herbage from vines. *Hay* (International term).

vines Any plant whose stems require support or lie on the ground. *Aerial parts* (International term).

viscera All organs in the great cavity of the body. The viscera of fish include the gills, heart, liver, spleen, stomach, and intestines and their contents. The viscera of mammals include the esophagus, heart, lungs, liver, spleen, stomach, and intestines (but not their contents). The viscera of poultry include the esophagus, heart, liver, spleen, stomach, crop, gizzard, undeveloped eggs, and intestines and their contents.

waste See *refuse* (International term).

whey The watery part of milk separated from the coagulated curd.

whey albumin One of the whey proteins.

whey fermentation solubles Whey together with the water-soluble substances produced during the fermentation of whey.

whey low lactose The product resulting from removal of some of the milk sugar from whey.

whole plant See *entire plant* (International term).

wort The liquid portion of malted grain. It is a solution of malt sugar and other water soluble extracts from malted mash.

yeast fermentation grains Residue of grains after being used as a source of carbohydrate for yeast fermentation.

yeast with medium See *medium with yeast*.

Glossary of Process Terms Used in International Feed Names

acid hydrolysed See *hydrolyzed*

acidified Addition of an acid to provide a pH lower than pH 7. Sometimes a precipitate forms which may be removed by mechanical means (i.e., curd from whey).

air ashed Reduced by combustion in air to a mineral residue.

alcohol extracted Treated with alcohol to remove all alcohol-soluble substances.

ammoniated Combined or impregnated with ammonia or an ammonium compound.

artificially dried Moisture removed by other than natural means. See *fan air dried with heat* (International term).

aspirated Removal of light materials from heavier materials by use of air. Refers to chaff, dust, or other light materials.

autoclaved Cooked under pressure in an autoclave.

barn cured Dried with forced ventilation in an enclosure. Refers to forage. See *fan air dried without heat* (International term).

bitterness extracted Treated to remove bitter taste.

blended Mingled or combined. Refers to ingredients of a mixed feed; does not imply uniformity of dispersion.

blocked Compressed into a large solid mass.

bolted Separated from parent material by means of a bolting cloth. Refers to two ingredients (e.g., bran separated from flour).

calcined Heated to high temperature in the presence of air.

canned Processed, packaged, sealed, and sterilized in cans or similar containers.

centrifuged Separated by a force moving away from a center.

chipped Cut or broken into fragments or cut into small, thin slices.

chopped Reduced in particle size by cutting.

cleaned Subjected to any process (e.g., scalping, screening, aspiration, or magnetic separation) by which unwanted material is removed.

clipped Refers to removal of ends of whole grain.

close planted Planted with less than normal distance betw-en rows.

coagulated Curdled, clotted, or congealed, usually by the action of a coagulant.

coarse bolted Separated from parent material by means of a coarsely woven bolting cloth.

coarse sifted Separated according to particle size by passage through coarsely woven wire sieves.

condensed Reduced in volume by removal of moisture.

conditioned Brought to predetermined moisture characteristics or temperature (or both) prior to further processing. See *tempered* (International term).

cooked Heated in the presence of moisture to alter chemical or physical characteristics (or both) or to sterilize. See *pressure cooked.*

cracked Reduced in size by a combined breaking and crushing action. Refers to particles of grain.

crimped Rolled with corrugated rollers. The grain to which this term refers may be tempered or conditioned before it is crimped, and may be cooled afterward.

crumbled Broken with corrugated rollers. Refers to pellets.

crushed See *rolled.*

culture Biological material produced in a culture.

cured Prepared for keeping or use (e.g., by drying, smoking, or salting or by using a chemical preservative).

D-activated Activated with vitamin D (e.g., by ultra-violet light). Refers to plant or animal sterol fractions.

debittered Having had bitter substances removed.

defluorinated Having had fluorine partially removed.

degermed Having had the embryos wholly or partially separated from the starch endosperms. Refers to seeds. See *without hulls* (International term).

dehulled Having had the hulls removed. See *without hulls* (International term).

dehydrated Having had most of the moisture removed by heat.

deribbed Having had the primary veins removed. Refers to leaves.

digested Subjected to prolonged heat and moisture, or to chemicals or enzymes with a resultant change or decomposition of the physical or chemical nature.

dressed Made uniform in texture by breaking or screening lumps or by applying liquid(s). Refers to feed.

dried See *dehydrated* (International term)

dry milled Milled by tempering with a small amount of water or steam to facilitate separation into component parts. Refers to kernels of grain.

dry rendered Having undergone (1) cooking in open steam-jacketed vessels until the water has evaporated and (2) removal of fat by draining and pressing. Refers to residues of animal tissues.

ensiled Preserved by ensiling, a process in which finely cut parts of plants, packed in an air-tight chamber (e.g., a silo), undergo an acid fermentation that retards spoilage.

etiolated Grown in reduced light. Refers to plants.

eviscerated Subjected to removal of all organs. Refers to the great cavity of an animal's body.

expanded Increased in volume as a result of abrupt reduction in pressure. Refers to a feed or feed mixture that is extruded after being subjected to moisture, pressure, and temperature to gelatinize the starchy part.

expeller extracted See *mechanically extracted.*

extracted, mechanical See *mechanically extracted.*

extracted, solvent See *solvent extracted.*

extruded Pushed through orifices of a die under pressure. Refers to feed.

extruded with steam Pushed through orifices of a die under pressure and after preconditioning with steam. Refers to feed.

extruded without steam Pushed through orifices of a die under pressure and in the absence of steam. Refers to feed.

fan air dried Dried with a device producing a current of air.

fan air dried with heat Dried with a device producing a current of heated air. Syn: *artificially dried.*

fermented Acted upon by yeasts, filamentous fungi, or bacteria in a controlled aerobic or anaerobic process. Refers to products (e.g., grains and molasses) used in the manufacture of alcohols, acids, vitamins of the B complex group, and antibiotics.

field cured Dried by exposure to the atmosphere. See *sun-cured* (International term).

finely ground Reduced to very small particles by impact, shearing, or attrition.

finely screened Separated according to particle size by passage through a finely woven meshed material.

finely sifted Separated according to particle size by passage through a finely woven meshed material.

flaked (1) Prepared by a method involving the use of high heat, tempering, and rollers set close together. (2) Cut into flat pieces (e.g., potato flakes.) Syn: *steamed flaked.*

fused Blended by melting.

gelatinized Reptured by a combination of moisture, heat, and pressure. Refers to starch granules of a feed.

ground Reduced in particle size by impact shearing or attrition.

heat and acid precipitated Separated from a suspension or solution by action of heat and acid.

heat hydrolyzed See *hydrolyzed*

heat processed Prepared by a method involving the use of elevated temperatures, with or without pressure.

heat processed flaked See *flaked.*

heat rendered Melted, extracted, or clarified by heating. (Water and fat are usually removed).

homogenized Broken down into evenly distributed globules small enough to remain as an emulsion for long periods. Refers to particles of fat.

hydraulically extracted See *mechanically extracted.*

hydrolyzed Subjected to hydrolysis, a process by which complex molecules (e.g., those in proteins) are split into simpler units by chemical reaction with water molecules. (The reaction may be produced by an enzyme, catalyst, or acid or by heat and pressure)

iodinated Treated with iodine.

irradiated Treated, prepared, or altered by exposure to radiant energy.

kibbled Cracked or crushed. Refers to baked dough or to extruded feed that was cooked before or during the extrusion process.

lactase hydrolyzed See *hydrolyzed*

leached Affected by the action of percolating water or other liquid.

magnetic separation Removal of ferrous material by magnets (e.g., removal of iron objects from mixed feed).

malted Converted into malt or treated with malt or malt extract.

maltase processed Treated with the enzyme maltase.

mechanically extracted Extracted by heat and mechanical pressure. Refers to removal of fat or oil from the seeds. Syn: *expeller extracted, hydraulically extracted, old process.*

mechanically extracted caked Extracted from seeds by heat and mechanical pressure in such a way that the remaining product (e.g., cottonseed meal) is caked. Refers to fat or oil.

micronized Heating by gas-fired infrared generators to 150° C (300° F). The term micronized was coined to describe this dry heat treatment since microwaves are emitted in the heating process. Refers to grain.

mixed Two or more materials combined by agitation to a specific degree of dispersion.

molded Overgrown or otherwise acted upon by fungi.

new process See *solvent extracted.*

old process See *mechanically extracted.*

partially dry See *dry matter content of feed samples.*

partially extracted Partially removed from a feed by a chemical or mechanical process. Refers to fat or oil.

pearled Reduced by machine brushing to smaller, smooth particles. Refers to dehylled grains (e.g., pearled barley).

pelleted Made into pellets.

polished Smoothed by a mechanical process. Refers to grain (e.g., polished rice.

popped Heated with accompanying expansion until a high percentage of actual explosion or eruption occurs. Refers to grain (e.g., popped corn [maize]) *precipitated* Separated from suspension or solution as a result of a chemical or physical change.

premixed Mixed with a diluent or carrier (or both) preliminary to final mixing with other ingredients.

prepressed solvent extracted Removed from materials partly by heat and mechanical pressure and (later) partly by organic solvents. Refers to fat, oil, or juice.

pressure cooked Heated either wet or dry and under pressure greater than atmospheric pressure.

pulverized See *ground.*

retort charred Partly burned in a closed retort. Refers to bone black.

roasted Cooked in an oven by dry heat. For grains, cooked or heated with dry heat with an exit temperature of 150° C (300° F). Usually accompanied by expansion and toasted appearance.

rolled Compressed between rollers. Rolling may entail tempering or conditioning. See *steam rolled.*

scalped Removed by screening. Refers to large particles.

scoured Cleansed by impact or friction. Refers to removal of the beard from the wheat kernel.

screened Separated into different sizes by being passed over or through screens.

separation Classification of particles by size, shape, or density.

separation, magnetic See *magnetic separation.*

shredded Cut into long thin pieces.

shrunken Compacted as by partial loss of water; or become smaller in size.

sifted Separated into different sizes by being passed through wire or nylon sieves.

sizing See *screening.*

skimmed Removed by settling, flotation, or centrifuging. Refers to removal of the lighter part of a liquid from the heavier part (e.g., removal of cream from milk).

solvent-extracted Removed from materials (e.g., soybean seeds) by organic solvents. Refers to fat or oil. Syn: new process.

solvent extracted caked Fat or oil removed from materials by organic solvents and pressed to make a cake.

spent Exhausted of absorbing properties (i.e., spent bone black).

stabilized Made more resistant to chemical change by an added substance.

stack-ensiled Ensiled while in a pile above ground.

steamed Treated with steam to alter phyiscal or chemical (or both) properties. Syn: steam-cooked, steam-rendered, tanked.

steep-extracted Soaked in water or other liquid to remove soluble materials. Refers to grain (e.g., corn that is being wet-milled).

Steffen process A process for treating beet molasses to recover more sugar through precipitation of calcium sucrate

sun-cured Dried by exposure to the direct rays of the sun

sun-cured brown Dried by exposure to the direct rays of the sun, then put in a stack or bale with excess moisture, where heat causes browning.

sun-cured on riders Stacked on tripods made of poles, then sun-cured. Refers to forage.

tempered Brought to predetermined moisture characteristics or temperature (or both) before further processing. Syn: conditioned.

threshed Separated from straw by impaction and subsequent screening. Refers to grain, peas or beans.

toasted Browned, dried, or parched by exposure to a wood fire or to gas or electric heat.

toxicity extracted Poisonous substance removed.

vacuum-dehydrated Dehydrated under vacuum. See dehydrated

wafered Agglomerated by compressing into a form usually measuring more in diameter or cross-section than in length. Refers to fibrous feeds (e.g., wafered alfalfa hay).

washed Cleaned by the action of water.

water-extracted Removal of soluble substances from a product with water.

weathered Exposure of a material to air, sunlight and precipitation.

wet Material containing liquid, or which has been soaked or moistened with water or other liquid.

wet-milled Steeped in water, which may contain sulfur dioxide, to facilitate separation of the parts. Refers to kernels of corn (maize).

whole-pressed Pressed to remove oil. Refers to seeds with hulls (i.e., cotton seeds).

wilted A product without turgor as a result of water loss.

SECTION 2

FEEDSTUFFS UNDER CONTROL OF GROWER AND FEED MANUFACTURER

Usually the feeds produced by the farmer without processing are under his control, but many large farmers now have their own feed mill so there is some overlapping.

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Alfalfa. Medicago sativa				
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6		x
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5		x
-hay, s-c, early bloom, (1)	1-00-059	90.1	x	
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3		x
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	x	
-aerial part, ensiled, (3)	3-00-212	27.5	x	
-seed screenings, (5)	5-08-326	90.3		x
Almond. Prunus amygdalus				
-hulls, (4)	4-00-359	88.4		x
Animal				
-blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2		x
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1		x
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1		x
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1		x
Apples. *Malus spp*				
-fruit, fresh, (4)	4-00-421	15.9	x	
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4		x
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5		x
Apricots. *Prunus armeniaca*				
-fruit, fresh, (4)	4-20-438	14.6	x	
-fruit wo pits, dehy, (4)	4-15-311	90.0		x
Artichoke. *Cynera scolymus*				
-roots, fresh, (4)	4-00-430	20.5	x	
Asparagus. *Asparagus officinalis*				
-stem butts, fresh, (2)	2-00-436	91.0		x
Avocado. *Persea americana*				
-fruit wo pits, grnd, (4)	4-15-312	91.4		x
Babassu. *Orbignya spp*				
-kernels, extn unspecified grnd, (5)	5-00-453	92.7		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Bakery				
-refuse, dehy, (4)	4-20-419	90.0		x
Banana. Musa spp				
-fruit, fresh, (4)	4-00-485	24.3	x	
-peelings, dehy, grnd, (4)	4-00-486	88.0		x
Barley. Hordeum vulgare				
-hay, s-c, (1)	1-00-495	88.5	x	
-straw, (1)	1-00-498	91.7	x	
-grain screenings, (4)	4-00-542	88.9		x
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	x	
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3		x
Bean. Phaseolus spp				
-straw, (1)	1-00-585	88.4	x	
-cannery residue, fresh (2)	2-00-587	9.4	x	
Bean, kidney. Phaseolus vulgaris				
-kidney, seeds, (5)	5-00-600	88.9		x
Bean, lima. Phaseolus limensis				
-seeds, (4) Butter bean	4-15-317	90.0		x
Bean, mung. Phaseolus aureus				
-seeds, (5)	5-08-185	90.0		x
Bean, navy. Phasiolus vulgaris				
-seeds, (5)	5-00-623	89.7		x
Beet, mangels. Beta spp				
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	x	

Table 6 . Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Beet, common. Beta vulgaris				
-leaves, dehy, (1)	1-20-418	90.0	x	
Beet, sugar. Beta saccharifera				
-straw, (1)	1-00-644	81.6		x
-hulls, (1)	1-00-643	85.3		x
-sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	x	
-crowns, fresh, (4)	4-00-648	18.0	x	
-root tips (4)	4-20-436	19.2*		x
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1		x
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7		x
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2		x
Bermudagrass. Cynodon dactylon				
-hay, s-c, (1)	1-00-703	90.9	x	
-aerial part, fresh, (2)	2-00-712	28.9	x	
Bermudagrass, coastal. Cynodon dactylon				
-coastal, hay, s-c, (1)	1-00-716	91.0	x	
Blood. see Animal				
Bluegrass, Kentucky. Poa pratensis				
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	x	

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Bluestem. Andropogon spp -aerial part, fresh, early vegetative, (2)	2-00-821	26.8	x	
Bread, white. -enriched, (4)	4-08-359	64.1		x
Broccoli. Brassica oleracea botrytis -aerial part, dehy, (4)	4-20-417	90.0		x
stems, fresh, (4)	4-00-884	45.1	x	
Brome, cheatgrass. Bromus tectorum -cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	x	
Brome, smooth. Bromus inermis -smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	x	
Brussel, sprouts. Brassica oleracea gemmifera -heads fresh, (4)	4-08-187	14.8	x	
Buckwheat. Fagopyrum spp -grain, (4)	4-00-994	87.8	x	
-flour by-product wo hulls, coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7		x
Buffalograss. Buchloe dactyloides -aerial part, fresh, (2)	2-01-010	45.8	x	
Burclover. Medicago, lispida -seeds, (4)	4-20-113	93.4	x	
Buttermilk. See Cattle				

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Cabbage. Brassica oleracea, capitata				
-aerial part, fresh, (4)	4-01-046	9.4	x	
-aerial part, dehy, (4)	4-15-314	88.3		x
-cannery residue, (4)	4-15-313	15.8		x
Carob bean. Ceratonia siliqua -seeds , (5)	5-09-306	81.2		x
Carrot. Daucus spp -leaves, fresh, (4)	4-01-143	16.5		x
-pulp, wet grnd, (4)	4-15-315	14.0		x
-roots, dehy, (4)	4-20-148	90.0		x
-roots, fresh, (4)	4-01-145	11.9	x	
Casein. see Cattle				
Cassava. Manihot spp -starch by-product, dehy, (4)	4-08-572	90.0		x
Castorbean. Ricinus communis -seeds, extn unspecified grnd, (5) Castor bean meal	5-20-420	90.0		x
Cattle, Bos spp -whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3		x
-casein, milk acid precipitated dehy. mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3		x
-cheese rind, (5)	5-01-163	82.8		x
-livers, raw, (5) Beef liver	5-01-166	27.2		x
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3		x
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3		x
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1		x
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-cottage, cheese, (5)	5-08-001	21.0		x
-manure, dehy grnd, (7)	7-01-190	93.5		x
Cauliflower. *Brassica aleracea botrytis*				
-heads, fresh, (4)	4-08-189	9.0	x	
Celery. *Apium graveolens*				
-aerial part, fresh, (4)	4-01-195	5.9	x	
-stalks, fresh, (4)	4-01-197	6.3	x	
-stalks, dehy, (4)	4-15-316	90.0		x
Chicken. *Gallus domesticus*				
-gizzards, raw, (5)	5-07-948	25.0		x
-manure, dehy, (5)	5-20-423	90.0		x
Chicken, broiler. *Gallus, domesticus*				
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*		x
-manure w shavings added, dehy, (5)	5-20-425	91.0*		x
Citrus. *Citrus spp*				
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2		x
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9		x
Citrus, grapefruit. *Citrus paradisi*				
-fruit, fresh, (4)	4-01-242	13.6		x
-pulp, shredded, wet, (4)	4-01-243	14		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Citrus, lemon. Citrus limon				
-pulp, (4)	4-11-753	92.8		x
Citrus, orange. Citrus sinensi-				
-pulp, ensiled, (3)	3-01-250	11.3		x
-fruit, fresh, cull, (4)	4-01-252	12.8		x
-cannery residue, dehy, (4)	4-15-318	90.6		x
-pulp, shredded wet, (4)	4-01-253	14.4		x
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0		x
Clover, alsike. Trifolium hybridum				
-alsike, hay, s-c, (1)	1-01-313	87.7	x	
-alsike, aerial part, fresh, (2)	2-01-316	22.4	x	
Clover, crimson. Trifolium incarnatum				
-crimson, hay, s-c, (1)	1-01-328	88.9	x	
-crimson, aerial part, fresh, (2)	2-01-336	17.6	x	
Clover, ladino. Trifolium repens				
-ladino, hay, s-c, (1)	1-01-378	89.5	x	
-ladino, aerial part, fresh, (2)	2-01-383	17.7	x	
Clover, red. Trifolium pratense				
-red, hay, s-c, (1)	1-01-415	79.5	x	
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	x	
-red, seeds, (5)	5-08-004	87.9		x
-red, seed screenings, (5)	5-08-005	90.3		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Coconut. Cocos nucifera				
-meats, mech extd grnd, (5)				
Coconut meal, mechanical extracted (AAFCO)	5-01-572	92.8		x
Copra meal, mechanical extracted (AAFCO)				
Coffee. Coffea spp				
-hulls, (1)	1-11-479	90.0		x
Corn. Zea mays				
-aerial part, s-c, mature, (1)	1-02-772	68.1	x	
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	x	
-cobs, grnd, (1)	1-02-782	89.8		x
Ground corn cob (AAFCO)				
-aerial part, ensiled, (3)	3-02-822	23.7	x	
Corn fodder silage				
-ears w husks, ensiled, (3)	3-02-839	43.4*	x	
-ears, grnd, (4)	4-02-849	85.1	x	
Corn and cob meal (AAFCO)				
Ear corn chop (AAFCO)				
Ground ear corn (AAFCO)				
-grits by-product, mn 5% fat, (4)	4-02-887	89.8		x
Hominy feed (CFA)				
Hominy feed (AAFCO)				
-distillers grains, dehy, (5)	5-02-842	93.1		x
Corn distillers dried grains (CFA)				
Corn distillers dried grains (AAFCO)				

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5		x
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6		x
Corn, dent yellow. *Zea mays, indentata*				
-dent yellow, grain, (4)	4-02-935	87.0	x	
Cottage cheese. see Cattle				
Cotton. *Gossypium spp*				
-bolls, s-c, (1)	1-01-596	91.8		x
-gin by-product, (1)	1-08-413	90.3		x
-hulls, (1)				
cottonseed hulls (AAFCO)	1-01-599	90.8		x
-hulls wo lint, (1)	1-01-600	90.9		x
-seeds, grnd, (5)	5-01-608	92.7		x
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7		x
Cowpea. *Vigna Spp*				
-hay, s-c, (1)	1-01-645	90.4	x	
-seeds, (5) Blackeye bean	5-01-661	89.0		x

-Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Crab. Callinectes sapidus, Cancer spp Paralithodes camschatica				
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3		x
Dates. Phoenix dactylifera -fruit, dehy, (4)	4-01-752	91.9	x	
Deervetch, birdsfoot. Lotus corniculatus -birdsfoot, hay, s-c, (1)	1-05-044	89.7	x	
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	x	
Distillers grains. see Corn; see Grains; see Rye				
Distillers solubles. see Corn				
Digester tankage. see Animal				
Emmer. Triticum dicoccum -grain, (4)	4-01-830	90.8	x	
Fenugreek. Trigonella foenumgraecum -seeds, (8)	8-01-856	90.7		x
Fescue, alta. Festuca arundinacea -alta, aerial part, fresh, (2)	2-01-889	23.9	x	
Fescue, meadow. Festuca elatior -meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	x	
-meadow, aerial part, fresh, (2)	2-01-920	28.6	x	

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Fig, common. Ficus carica				
-fruit, dehy, (4)	4-01-955	76.0		x
Fish				
-stickwater solubles, cooked dehy, mn 60% protein, (5)				
Dried fish solubles (AAFCO)	5-01-971	92.3		x
oil, (7)				
Blended fish oil (CFA)	7-01-965	100.0*		x
Fish oil (AAFCO)				
Fish, anchovy. Engraulis spp				
-anchovy, whole or cuttings, cooked mech extd dehy grnd, (5)				
Fish meal, anchovy	5-01-985	92.0		x
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family)				
-white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5)				
White fish meal (CFA)	5-02-025	91.0		x
Fish, cod, meal				
Fish, cusk, meal				
Fish, haddock, meal				
Fish, hake, meal				
Fish, pollock, meal				
Fish, monkfish, meal				
Fish, skate, meal				
Flax, common. Linum usitatissimum				
-fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6		x
-hulls, (1)	1-02-037	92.0		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-common, seed screenings, (4)	4-02-056	91.4		x
-common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9		x
-seeds, (5)	5-02-052	90.8		x
Fly. Mesca domestica				
-pupae, dehy grnd, (5)	5-20-422	90.0		x
Gamagrass, eastern. Tripsacum dactyloides				
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	x	
Gamagrass, Florida. Tripsacum floridanum				
-Florida, hay, s-c, (1)	1-02-087	92.3	x	
Garbage.				
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6		x
Grains.				
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0		x
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1		x
-distillers grains, dehy, (5)	5-02-144	92.6		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Grama. Bouteloua spp				
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	x	
-aerial part, fresh, mature, (2)	2-02-166	63.4	x	
Grapes. Vitis spp				
-fruit, dehy, (4)	4-02-203	84.8		x
-fruit, dehy, cull, (4)	4-08-427	84.8	x	
-fruit, fresh, (4)	4-02-204	18.1	x	
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7		x
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5		x
-raisin syrup by-product, (4)	4-08-428	89.4		x
-seeds, (4)	4-20-133	85.0		x
-seeds, dehy grnd, (4)	4-08-082	90.0		x
Guar. Cyamopsis tetragonoloba				
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0		x
Hemp. Cannabis sativa				
-seeds, (5)	5-20-136	91.1		x
-seeds, extn unspecified grnd, (5)	5-02-367	92.8		x
Hominy feed. see Corn grits by-product				
Hops. Humulus spp				
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1		x
Ipilipil. Leucaena leuocephala				
-leaves, dehy grnd, (4)	4-20-446	91.0		x

Table 6 . Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Kale. *Brassica oleracea acephala*				
-aerial part, fresh (2)	2-02-446	11.6	x	
Lespedeza. *Lespedeza spp*				
-hay, s-c, midbloom, (1)	1-02-511	94.1	x	
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	x	
Lettuce. *Lactuca sativa*				
-aerial part, dehy grnd, (4)	4-15-319	90.0		x
-aerial part, fresh, (2)	2-02-624	5.3	x	
-refuse, dehy, (4)	4-15-320	90.0		x
Livers. see Animal; see Cattle				
Lobster. *Homarus americanus*				
-process residue, dehy grnd, (5)	5-02-635	90.0		x
Locust				
-seeds, (5)	5-20-429	90.8		x
Manure. see Cattle				
Meat meal. see Animal				
Meat meal tankage. see Animal				
Melons, pie. *Curcurbita spp*				
-fruit w seeds, fresh, (4)	4-08-459	4.1	x	
Mesquite. *Prosopis spp*				
-seeds w pods, s-c, (1)	1-15-321	91.5	x	
Milk. see Cattle				
Millet. *Setaria spp*				
-grain, (4)	4-03-098	89.9	x	

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Molasses. see Beet; see Sugarcane; see Citrus				
Mustard. Brassica spp				
-seeds, extn unspecified grnd, (5)	5-03-154	90.0		x
Napiergrass. Pennisetum purpureum				
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	x	
Nectarine. Prunus persica nectarina				
-fruit, fresh, (4)	4-20-430	15.8*	x	
Oak. Querus spp				
-acorns, (4)	4-07-755	70.7	x	
Oats. Avena sativa				
-hay, s-c, (1)	1-03-280	90.5	x	
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2		x
-straw, (1)	1-03-283	92.1	x	
-aerial part, ensiled, (3)	3-03-298	31.0	x	
-grain, (4)	4-03-309	89.7	x	
Oats, wild. Avena fatua				
-wild, grain, (4)	4-03-394	91.0	x	
Olives. Olea europaea				
-cannery residue, (4)	4-15-323	91.7		x
-pulp, dehy, (4)	4-15-322	93.5		x
Onion. Allium spp				
-refuse, dehy, (1)	1-15-325	89.4		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-seed screenings, (4)	4-15-324	89.1		x
Orchardgrass. Dactylis glomerata				
-hay, s-c, (1)	1-03-438	88.7	x	
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	x	
Palm. Elaeis spp				
-seeds, extn unspecified grnd, (5)	5-03-487	91.3		x
Parsnip. Pastinaca sativa				
-roots, fresh, (4)	4-03-536	13.7	x	
Pea. Pisum spp				
-split pea by-product, grnd, (1)	1-08-478	89.5		x
-straw, (1)	1-03-577	84.7	x	
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	x	
-seeds, dehy, (5)	5-20-135	90.5		x
-seeds, grnd, (5)	5-03-598	89.1	x	
Peaches, Prunus persica				
-fruit, fresh, (4)	4-20-432	13.1	x	
-fruit wo pits, dehy, (4)	4-13-452	90.0		x
Peanut. Arachis hypogaea				
-hulls, grnd, (1)	1-03-629	94.4		x
-hay, s-c, (1)	1-03-619	91.6	x	
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
-kernels w skins w hulls, (5)	5-03-653	93.4		x
Pears. *Pyrus spp* -fruit, fresh, (4)	4-03-660	17.3	x	
Pecan. *Carya illinoinsis* -shells, grnd, (1)	1-20-428	86.0*		x
Pineapple. *Ananas comosus* -cannery residue, dehy, (4) Pineapple bran	4-03-722	88.6		x
Plums. *Prunus domestica* -fruits, fresh, (4)	4-20-433	14.3	x	
Potato. *Solanum tuberosum* -process residue, dehy, (4) Potato by-product, dried Potato pomace, dried Potato pulp, dried Potato waste, dried	4-03-775	88.4		x
-roots, baked dehy, (4)	4-20-153	86.4		x
-roots, cooked, (4)	4-03-784	24.3	x	
-roots, dehy grnd, (4) Potato meal	4-07-850	91.1		x
-roots, fresh, (4)	4-03-787	22.8	x	
Poultry -feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5) Hydrolyzed poultry feathers (AAFCO) Feather meal	5-03-795	92.7		x
-viscera w feet w heads, dry or wet rendered dehy grnd, (5) Poultry by-product meal (CFA)	5-03-799	93.0		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Pricklypear. *Opuntia spp*				
-aerial part, fresh, (2)	2-01-061	16.8	x	
Prunes. *Prunus domestica*				
-fruit, fresh, (4)	4-20-359	14.3	x	
-fruit, dehy grnd, (4)	4-20-435	90.0		x
-fruit wo pits, dehy, (4)	4-20-434	90.0		x
Pumpkins. *Cucurbita pepo*				
-fruit, fresh, (4)	4-03-815	9.1	x	
Ramie. *Boehmeria nivea*				
-leaves, dehy grnd, (1)	1-03-857	90.0		x
Rape. *Brassica spp*				
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3		x
Rice. *Oryza sativa*				
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8		x
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8		x
-groats, polished, (4) Rice, white, polished	4-03-942	88.5		x

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter	Grower	Feed manufacturer
		%		
-polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2		x
Rubbertree, para. *Hevea, brasiliensis*				
-seeds, extn unspecified caked, (5)	5-20-147	86.0*		x
Rutabagas. *Brassica napobrassica*				
-roots, fresh, (4)	4-04-001	11.4	x	
Rye. *Secale cereale*				
-straw, (1)	1-04-007	91.0	x	
-flour by-product, coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2		x
-grain, (4)	4-04-047	88.8	x	
-distillers grains, dehy, (5) Rye distillers dried grains (CFA) Rye distillers dried grains (AAFCO)	5-04-023	93.0		x
Ryegrass, Italian. *Lolium multiflorum*				
-Italian, aerial part, fresh, (2)	2-04-073	21.4	x	
Safflower. *Carthamus tinctorius*				
-seeds, (4)	4-07-958	92.7		x
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7		x
Sage, black. *Salvia mellifera*				
-black, browse, fresh, stem cured, (2)	2-05-564	52.0*	x	

Table [illegible]. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Sesame. Sesmum indicum				
-seeds, mech extd grnd, (5)	5-04-220	92.7		x
Silkworm.				
-pupae, dehy grnd, (5)	5-20-421	90.0		x
Shrimp				
-process residue, dehy grnd, (5)	5-13-541	90.0		x
Sorghum. Sorghum vulgare				
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	x	
Sorghum, feterita. Sorghum, vulgare				
-grain, (4)	4-04-369	88.6	x	
Sorghum, grain variety. Sorghum vulgare				
-aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	x	
-grain, (4)	4-04-383	88.5	x	
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8		x
Sorghum, hegari. Sorghum, vulgare				
-grain, (4)	4-04-398	89.0	x	
Sorghum, Johnsongrass. Sorghum halepense				
-hay, s-c, (1)	1-04-407	90.5	x	
Sorghum, kafir. Sorghum vulgare, caffrorum				
-grain, (4)	[illegible]-04-[illegible]8	89.2	x	

Table 6. Feedstuffs under control of grower or feed manufacturer.

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Amount of feed (dry basis) Grower	Amount of feed (dry basis) Feed Manufacturer
Sorghum, kaoliang. Sorghum, vulgare nervosum				
-grain, (4)	4-04-431	88.7	X	
Sorghum, milo. Sorghum vulgare, subglabrescens				
-grain, (4)	4-04-444	89.0	X	
Sorghum, sorgo. Sorghum vulgare, saccharatum				
-aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	X	
Soybean. Glycine max				
-hay, s-c, (1)	1-04-558	88.9	X	
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0		X
-straw, (1)	1-04-567	87.7	X	
-aerial part, ensiled, (3)	3-04-581	27.2	X	
-seeds, (5)	5-04-610	90.6		X
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2		X
Spleens. see Cattle				
Squirreltail. Sitanion spp				
-aerial part, fresh, stem cured, (2)	2-05-566	80.0*	X	
Sugarcane. Saccharum officinarum				
-molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5		X

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter	Grower	Feed manufacturer
		%		
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2		x
Sunflower. *Helianthus spp*				
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0		x
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8		x
Sweetclover, yellow. *Melilotus officinalis*				
-yellow, seed screenings, (5)	5-08-007	87.3		x
Swine. *Sus scrofa*				
-lard, (4) Lard	4-04-790	100.0*		x
Timothy. *Phleum Pratense*				
-hay, s-c, late vegetative, (1)	1-04-881	87.0	x	
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	x	
-aerial part, ensiled, (3)	3-04-922	33.5	x	
Tomato. *Lycopersicon esculentum*				
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5		x
-pulp, wet, (5)	5-05-042	25.0		x
Turnip. *Brassica rapa*				
-roots, fresh, (4)	4-05-067	9.6	x	
Vetch. *Vicia spp*				
-hay, s-c, (1)	1-05-106	88.2	x	

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Walnuts. *Juglans spp*				
-meats w shells, grnd, (4)	4-20-129	93.2		x
Watergrass. *Hydrochloa caroliniensis*				
-seeds, (4)	4-20-128	90.0		x
Wheat. *Triticum spp*				
-hay, s-c, (1)	1-05-172	89.7	x	
-straw, (1)	1-05-175	90.9	x	
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	x	
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5		x
-grain, (4)	4-05-211	88.5	x	
-grain screenings, (4)	4-05-216	88.9		x
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2		x
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*		x
Wheatgrass. *Agropyron spp*				
-aerial part, fresh, mature, (2)	2-05-363	60.5	x	
Wheatgrass, crested. *Agropyron cristatum*				
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	x	
Whey. see Cattle				

Table 6. Feedstuffs under control of grower or feed manufacturer

List of feeds commonly fed to livestock and poultry	International reference number	Dry matter %	Grower	Feed manufacturer
Yeast, active. Saccharomyces cerevisiae				
-active, dehy, mn 15 billion live yeast cells per g, (7)				
Active dry yeast (AAFCO)	7-05-524	89.9		x
Yeast, brewers Saccharomyces. Saccharomyces cerevisiae				
-brewers saccharomyces, dehy grnd, (7)				
Brewers dried yeast (CFA)	7-05-528	93.4		x
Yeast, primary Saccharomyces. Saccharomyces cerevisiae				
-primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9		x

*Dry matter was estimated

SECTION 3

MAXIMUM AMOUNTS OF FEED (DRY BASIS) WHICH COULD BE IN THE DIET OF ANIMALS

This section consists of two parts for each animal. The first part consists of a table(s) which gives the amounts of diet dry matter consumed by the animal. This is followed by a table which gives the maximum amount of a feed ingredient which is usually fed to an animal. In many cases this is more than would be fed in a mixed commercial diet.

Note: Some of the internationalfeed names have been updated since the Atlas of U. S. and Canadian Feeds was published. The class number (first digit of the international feed reference number) has been changed on roots and vegetables from a 2 to a 4, however, the balance of the international reference number is the same.

Table 7. Daily dry matter intake of finishing beef cattle[a]

Body weight	Daily average gain	Daily dry matter per animal	Dry matter intake % or body weight
	kg	kg	
Finishing Steer Calves			
150	0.90	3.5	2.33
200	1.00	5.0	2,50
300	1.10	7.1	2,37
400	1.10	8.8	2.20
450	1.05	9.4	2.09
Finishing Yearling Steers			
250	1.30	7.2	2.88
300	1,30	8.3	2.77
400	1.30	10.3	2.57
500	1.20	11.5	2.30
Finishing Two-Year-Old Steers			
350	1.40	10.3	2.94
400	1.40	11.3	2.82
500	1.40	13.4	2.68
550	1.30	13.7	2.49
Finishing Heifer Calves			
150	0.80	3.5	2.33
200	0.90	5.0	2.49
300	1.00	7.3	2.43
400	0.95	8.7	2.18
Finishing Yearling Heifers			
250	1.20	7.6	3.05
300	1.20	8.6	2.87
400	1.20	10.7	2.67
450	1.10	11.0	2.45

[a] Adapted from National Research Council, Nutrient requirements of beef cattle. 1970. Printing and Publishing Office, National Acayemy of Sciences, 2101 Constitution Avenue, Washington, D.C.

Table 8. Energy requirements and estimated dry matter (DM) intake from forage and concentrates of lactating cows varying in body weight and milk production[a]

	Milk production (kg 4% FCM/day)								
	9.1	13.6	15.9	18.1	20.4	22.7	24.9	27.2	29.5
453.6 kg body wt									
Maintenance DE(Mcal)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Milk DE(Mcal)	13.2	19.8	23.1	26.4	29.7	33.0	36.3	36.3	42.9
Total DE(Mcal)	28.2	34.8	38.1	41.4	44.7	48.0	51.3	51.3	57.9
DM Intake (kg)[b]	11.8	13.6	15.0	15.0	15.9	16.8	17.2	17.2	19.1
Forage DM(kg)[c]	11.8	11.3	10.9	10.4	10.0	9.5	9.1	9.1	8.2
Concentrate DM(kg)	--	2.3	4.1	4.1	5.9	7.3	8.2	8.2	10.9
589.7 kg body wt									
Maintenance DE(Mcal)	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7
Milk DE(Mcal)	13.2	19.8	23.1	26.4	29.7	33.0	36.3	39.6	42.9
Total DE(Mcal)	31.9	38.5	41.8	45.1	48.4	51.7	55.0	58.3	61.6
DM Intake (kg)[b]	13.2	15.0	15.9	16.8	17.7	18.6	19.5	20.0	20.9
Forage DM(kg)[c]	13.2	13.2	13.2	13.2	12.7	12.3	11.8	11.3	10.9
Concentrate DM(kg)	--	1.8	2.7	3.6	5.0	6.4	7.7	8.6	10.0
725.8 kg body wt									
Maintenance DE(Mcal)	21.6	21.6	21.6	21.6	21.6	21.6	21.6	18.7	21.6
Milk DE(Mcal)	13.2	19.8	23.1	26.4	29.7	29.7	36.3	39.6	42.9
Total DE(Mcal)	34.8	41.4	44.7	48.0	51.3	51.3	57.9	58.3	64.5
DM Intake (kg)[b]	14.5	16.3	17.2	18.1	19.1	19.1	20.9	20.0	22.2
Forage DM(kg)[c]	14.5	14.5	14.5	14.5	14.5	14.5	14.1	11.3	13.2
Concentrate DM(kg)	--	1.8	2.7	3.6	4.5	4.5	6.8	8.6	9.1

[a] Department of Animal Sciences, Cornell University, Ithaca, New York, unpublish data

[b] Assumes forage DM to contain 0.499 Mcal DE/kg and concentrate DM to contain 0.726 Mcal DE/kg

[c] Forage DM may be fed as either hay or silage, actual DM intake from forage will vary according to forage quality and species

Note: The data in this table should be used for cows in all sections of the U. S. except the Western states.

Table 9. Daily milk and dry matter intake of lactating cows[a]

Milk, kg daily	kg	10	14	18	22	26	30
Dry matter intake	kg	13	14.5	15.9	17.1	18.4	19.6

[a] Utah State University data, unpublished.

Note: The data in this table should be used for cows in the Western States.

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Alfalfa. Medicago sativa				
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	25	25
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5	25	25
-hay, s-c, early bloom, (1)	1-00-059	90.1	25	80
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	25	80
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	50	80
-aerial part, ensiled, (3)	3-00-212	27.5	25	80
-seed screenings, (5)	5-08-326	90.3	30	10
Almond. Prunus amygdalus -hulls, (4)	4-00-359	88.4	25	25
Animal				
-blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	5	nu
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	5	nu
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6	nu	nu

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	5	2
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	5	nu
Apples. Malus spp -fruit, fresh, (4)	4-00-421	15.9	10	10
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	50	25
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	50	25
Apricots. Prunus armeniaca -fruit, fresh, (4)	4-20-438	14.6	10	10
-fruit wo pits, dehy, (4)	4-15-311	90.0	30	10
Artichoke. Cynera scolymus -roots, fresh, (4)	4-00-430	20.5	10	10
Asparagus. Asparagus officinalis -stem butts, fresh, (2)	2-00-436	91.0	20	10
Avocado. Persea americana -fruit wo pits, grnd, (4)	4-15-312	91.4	20	10
Babassu. Orbignya spp -kernels, extn unspecified grnd, (5)	5-00-453	92.7	15	15

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Bakery				
-refuse, dehy, (4)	4-20-419	90.0	50	20
Banana. Musa spp				
-fruit, fresh, (4)	4-00-485	24.3	20	20
-peelings, dehy, grnd, (4)	4-00-486	88.0	10	10
Barley. Hordeum vulgare				
-hay, s-c, (1)	1-00-495	88.5	25	60
-straw, (1)	1-00-498	91.7	10	10
-grain screenings, (4)	4-00-542	88.9	80	20
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	80	50
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3	50	20
Bean. Phaseolus spp				
-straw, (1)	1-00-585	88.4	5	nu
-cannery residue, fresh (2)	2-00-587	9.4	20	20
Bean, kidney. Phaseolus vulgaris				
-kidney, seeds, (5)	5-00-600	88.9	20	20
Bean, lima. Phaseolus limensis				
-seeds, (4) Butter bean	4-15-317	90.0	20	15
Bean, mung. Phaseolus aureus				
-seeds, (5)	5-08-185	90.0	20	10
Bean, navy. Phasiolus vulgaris				
-seeds, (5)	5-00-623	89.7	20	20
Beet, mangels. Beta spp				
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	30	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Dairy cattle lactating
		%	%	%
Beet, common. *Beta vulgaris*				
-leaves, dehy, (1)	1-20-418	90.0	20	20
Beet, sugar. *Beta saccharifera*				
-straw, (1)	1-00-644	81.6	5	5
-hulls, (1)	1-00-643	85.3	10	10
-sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	20	20
-crowns, fresh, (4)	4-00-648	18.0	20	20
-root tips (4)	4-20-436	19.2*	20	20
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1	20	10
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	25	30
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	25	30
Bermudagrass. *Cynodon dactylon*				
-hay, s-c, (1)	1-00-703	90.9	25	70
-aerial part, fresh, (2)	2-00-712	28.9	25	70
Bermudagrass, coastal. *Cynodon dactylon*				
-coastal, hay, s-c, (1)	1-00-716	91.0	25	70
Blood. see Animal				
Bluegrass, Kentucky. *Poa pratensis*				
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	25	80

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Bluestem. Andropogon spp				
-aerial part, fresh, early vegetative, (2)	2-00-821	26.8	25	nu
Bread, white.				
-enriched, (4)	4-08-359	64.1	30	25
Broccoli. Brassica oleracea botrytis				
-aerial part, dehy, (4)	4-20-417	90.0	10	10
stems, fresh, (4)	4-00-884	45.1	10	10
Brome, cheatgrass. Bromus tectorum				
-cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	25	nu
Brome, smooth. Bromus inermis				
-smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	25	80
Brussel, sprouts. Brassica oleracea gemmifera				
-heads fresh, (4)	4-08-187	14.8	10	10
Buckwheat. Fagopyrum spp				
-grain, (4)	4-00-994	87.8	30	30
-flour by-product wo hulls, coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7	30	30
Buffalograss. Buchloe dactyloides				
-aerial part, fresh, (2)	2-01-010	45.8	25	nu
Burclover. Medicago, lispida				
-seeds, (4)	4-20-113	93.4	20	20
Buttermilk. see Cattle				

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Amount of feed (dry basis) Dairy cattle lactating
		%	%	%
Cabbage. *Brassica oleracea, capitata*				
-aerial part, fresh, (4)	4-01-046	9.4	25	15
-aerial part, dehy, (4)	4-15-314	88.3	10	10
-cannery residue, (4)	4-15-313	15.8	30	20
Carob bean. *Ceratonia siliqua* -seeds, (5)	5-09-306	81.2	20	20
Carrot. *Daucus spp* -leaves, fresh, (4)	4-01-143	16.5	10	10
-pulp, wet grnd, (4)	4-15-315	14.0	30	20
-roots, dehy, (4)	4-20-148	90.0	30	30
-roots, fresh, (4)	4-01-145	11.9	30	20
Casein. see Cattle				
Cassava. *Manihot spp* -starch by-product, dehy, (4)	4-08-572	90.0	30	20
Castorbean. *Ricinus communis* -seeds, extn unspecified grnd, (5) Castor bean meal	5-20-420	90.0	10	10
Cattle, *Bos spp* -whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	20	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	20	10
-casein, milk acid precipitated dehy. mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	15	15
-cheese rind, (5)	5-01-163	82.8	10	15
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	10	15
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	15	15
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	15	15

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
-cottage, cheese, (5)	5-08-001	21.0	nu	nu
-manure, dehy grnd, (7)	7-01-190	93.5	30	nu
Cauliflower. *Brassica aleracea botrytis*				
-heads, fresh, (4)	4-08-189	9.0	20	10
Celery. *Apium graveolens*				
-aerial part, fresh, (4)	4-01-195	5.9	20	10
-stalks, fresh, (4)	4-01-197	6.3	20	10
-stalks, dehy, (4)	4-15-316	90.0	20	10
Chicken. *Gallus domesticus*				
-gizzards, raw, (5)	5-07-948	25.0	nu	nu
-manure, dehy, (5)	5-20-423	90.0	20	nu
Chicken, broiler. *Gallus, domesticus*				
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	15	nu
-manure w shavings added, dehy, (5)	5-20-425	91.0*	15	nu
Citrus. *Citrus spp*				
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	20	20
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9	15	10
Citrus, grapefruit. *Citrus paradisi*				
-fruit, fresh, (4)	4-01-242	13.6	20	10
-pulp, shredded, wet, (4)	4-01-243	14	20	10

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Dairy cattle lactating
		%	%	%
Citrus, lemon. *Citrus limon*				
-pulp, (4)	4-11-753	92.8	20	10
Citrus, orange. *Citrus sinensis*				
-pulp, ensiled, (3)	3-01-250	11.3	20	20
-fruit, fresh, cull, (4)	4-01-252	12.8	20	10
-cannery residue, dehy, (4)	4-15-318	90.6	30	30
-pulp, shredded wet, (4)	4-01-253	14.4	20	30
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	20	20
Clover, alsike. *Trifolium hybridum*				
-alsike, hay, s-c, (1)	1-01-313	87.7	25	80
-alsike, aerial part, fresh, (2)	2-01-316	22.4	25	50
Clover, crimson. *Trifolium incarnatum*				
-crimson, hay, s-c, (1)	1-01-328	88.9	25	80
-crimson, aerial part, fresh, (2)	2-01-336	17.6	25	50
Clover, ladino. *Trifolium repens*				
-ladino, hay, s-c, (1)	1-01-378	89.5	25	80
-ladino, aerial part, fresh, (2)	2-01-383	17.7	25	50
Clover, red. *Trifolium pratense*				
-red, hay, s-c, (1)	1-01-415	79.5	25	80
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	25	50
-red, seeds, (5)	5-08-004	87.9	10	nu
-red, seed screenings, (5)	5-08-005	90.3	10	nu

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Coconut. Cocos nucifera				
-meats, mech extd grnd, (5) Coconut meal, mechanical extracted (AAFCO) Copra meal, mechanical extracted (AAFCO)	5-01-572	92 8	15	15
Coffee. Coffea spp				
-hulls, (1)	1-11-479	90.0	10	10
Corn. Zea mays				
-aerial part, s-c, mature, (1)	1-02-772	68.1	25	10
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	20	10
-cobs, grnd, (1) Ground corn cob (AAFCO)	1-02-782	89.8	50	20
-aerial part, ensiled, (3) Corn fodder silage	3-02-822	23.7	30	50
-ears w husks, ensiled, (3)	3-02-839	43.4*	40	50
-ears, grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	80	50
-grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	75	50
-distillers grains, dehy, (5) Corn distillers dried grains (CFA) Corn distillers dried grains (AAFCO)	5-02-842	93.1	50	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	20	25
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	15	25
Corn, dent yellow. Zea mays, indentata				
-dent yellow, grain, (4)	4-02-935	87.0	80	50
Cottage cheese. see Cattle				
Cotton. Gossypium spp				
-bolls, s-c, (1)	1-01-596	91.8	15	nu
-gin by-product, (1)	1-08-413	90.5	15	nu
-hulls, (1) cottonseed hulls (AAFCO)	1-01-599	90.8	15	5
-hulls wo lint, (1)	1-01-600	90.9	10	5
-seeds, grnd, (5)	5-01-608	92.7	25	20
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	15	15
Cowpea. Vigna Spp				
-hay, s-c, (1)	1-01-645	90.4	25	70
-seeds, (5) Blackeye bean	5-01-661	89.0	20	20

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Crab. Callinectes sapidus, Cancer spp Paralithodes camschatica				
-process residue, dehy grnd, [illegible] 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	nu	nu
Dates. Phoenix dactylifera				
-fruit, dehy, (4)	4-01-752	91.9	20	10
Deervetch, birdsfoot. Lotus corniculatus				
-birdsfoot, hay, s-c, (1)	1-05-044	89.7	25	80
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	25	80
Distillers grains. see Corn; see Grains; see Rye				
Distillers solubles. see Corn				
Digester tankage. see Animal				
Emmer. Triticum dicoccum				
-grain, (4)	4-01-830	90.8	25	20
Fenugreek. Trigonella foenumgraecum				
-seeds, (8)	8-01-856	90.7	10	5
Fescue, alta. Festuca arundinacea				
-alta, aerial part, fresh, (2)	2-01-889	23.9	20	25
Fescue, meadow. Festuca elatior				
-meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	20	25
-meadow, aerial part, fresh, (2)	2-01-920	28.6	20	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	 Dairy cattle lactating
		%	%	%
Fig, common. Ficus carica				
-fruit, dehy, (4)	4-01-955	76.0	20	10
Fish				
-stickwater solubles, cooked dehy, mn 60% protein, (5) Dried fish solubles (AAFCO)	5-01-971	92.3	nu	nu
oil, (7) Blended fish oil (CFA) Fish oil (AAFCO)	7-01-965	100.0*	nu	nu
Fish, anchovy. Engraulis spp				
-anchovy, whole or cuttings, cooked mech extd dehy grnd, (5) Fish meal, anchovy	5-01-985	92.0	nu	nu
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family)				
-white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5) White fish meal (CFA) Fish, cod, meal Fish, cusk, meal Fish, haddock, meal Fish, hake, meal Fish, pollock, meal Fish, monkfish, meal Fish, skate, meal	5-02-025	91.0	nu	nu
Flax, common. Linum usitatissimum				
-fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	10	5
-hulls, (1)	1-02-037	92.0	20	10

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
-common, seed screenings, (4)	4-02-056	91.4	20	10
-common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	15	25
-seeds, (5)	5-02-052	90.8	30	20
Fly. Mesca domestica				
-pupae, dehy grnd, (5)	5-20-422	90.0	nu	nu
Gamagrass, eastern. Tripsacum dactyloides				
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	25	nu
Gamagrass, Florida. Tripsacum floridanum				
-Florida, hay, s-c, (1)	1-02-087	92.3	25	nu
Garbage.				
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	20	nu
Grains.				
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0	50	20
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1	50	15
-distillers grains, dehy, (5)	5-02-144	92.6	25	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Dairy cattle lactating
		%	%	%
Grama. Bouteloua spp				
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	25	nu
-aerial part, fresh, mature, (2)	2-02-166	63.4	25	nu
Grapes. Vitis spp				
-fruit, dehy, (4)	4-02-203	84.8	30	20
-fruit, dehy, cull, (4)	4-08-427	84.8	30	20
-fruit, fresh, (4)	4-02-204	18.1	30	20
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	30	20
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5	30	20
-raisin syrup by-product, (4)	4-08-428	89.4	30	20
-seeds, (4)	4-20-133	85.0	10	10
-seeds, dehy grnd, (4)	4-08-082	90.0	30	10
Guar. Cyamopsis tetragonoloba				
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	10	10
Hemp. Cannabis sativa				
-seeds, (5)	5-20-136	91.1	5	2
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	5	2
Hominy feed. see Corn grits by-product				
Hops. Humulus spp				
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1	5	5
Ipilipil. Leucaena leucocephala				
-leaves, dehy grnd, (4)	4-20-446	91.0	nu	nu

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Amount of feed (dry basis) Dairy cattle lactating
		%	%	%
Kale. Brassica oleracea acephala				
-aerial part, fresh (2)	2-02-446	11.6	30	10
Lespedeza. Lespedeza spp				
-hay, s-c, midbloom, (1)	1-02-511	94.1	25	70
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	25	80
Lettuce. Lactuca sativa				
-aerial part, dehy grnd, (4)	4-15-319	90.0	30	20
-aerial part, fresh, (2)	2-02-624	5.3	30	20
-refuse, dehy, (4)	4-15-320	90.0	30	20
Livers. see Animal; see Cattle				
Lobster. Homarus americanus				
-process residue, dehy grnd, (5)	5-02-635	90.0	nu	nu
Locust				
-seeds, (5)	5-20-429	90.8	30	20
Manure. see Cattle				
Meat meal. see Animal				
Meat meal tankage. see Animal				
Melons, pie. Curcurbita spp				
-fruit w seeds, fresh, (4)	4-08-459	4.1	20	10
Mesquite. Prosopis spp				
-seeds w pods, s-c, (1)	1-15-321	91.5	20	nu
Milk. see Cattle				
Millet. Setaria spp				
-grain, (4)	4-03-098	89.9	25	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Molasses. see Beet; see Sugarcane; see Citrus				
Mustard. *Brassica spp*				
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	10	5
Napiergrass. *Pennisetum purpureum*				
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	25	80
Nectarine. *Prunus persica nectarina*				
-fruit, fresh, (4)	4-20-430	15.8*	20	10
Oak. *Querus spp*				
-acorns, (4)	4-07-755	70.7	20	10
Oats. *Avena sativa*				
-hay, s-c, (1)	1-03-280	90.5	25	60
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	5	nu
-straw, (1)	1-03-283	92.1	10	10
-aerial part, ensiled, (3)	3-03-298	31.0	25	60
-grain, (4)	4-03-309	89.7	20	50
Oats, wild. *Avena fatua*				
-wild, grain, (4)	4-03-394	91.0	15	nu
Olives. *Olea europaea*				
-cannery residue, (4)	4-15-323	91.7	30	20
-pulp, dehy, (4)	4-15-322	93.5	30	20
Onion. *Allium spp*				
-refuse, dehy, (1)	1-15-325	89.4	20	nu

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
-seed screenings, (4)	4-15-324	89.1	20	nu
Orchardgrass. Dactylis glomerata				
-hay, s-c, (1)	1-03-438	88.7	25	80
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	25	80
Palm. Elaeis spp				
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	20	10
Parsnip. Pastinaca sativa				
-roots, fresh, (4)	4-03-536	13.7	30	30
Pea. Pisum spp				
-split pea by-product, grnd, (1)	1-08-478	89.5	30	20
-straw, (1)	1-03-577	84.7	10	10
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	25	40
-seeds, dehy, (5)	5-20-135	90.5	30	25
-seeds, grnd, (5)	5-03-598	89.1	30	25
Peaches, Prunus persica				
-fruit, fresh, (4)	4-20-432	13.1	30	20
-fruit wo pits, dehy, (4)	4-13-452	90.0	30	20
Peanut. Arachis hypogaea				
-hulls, grnd, (1)	1-03-629	94.4	5	nu
-hay, s-c, (1)	1-03-619	91.6	25	60
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	15	25

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Dairy cattle lactating
		%	%	%
-kernels w skins w hulls, (5)	5-03-653	93.4	15	10
Pears. Pyrus spp -fruit, fresh, (4)	4-03-660	17.3	30	20
Pecan. Carya illinoinsis -shells, grnd, (1)	1-20-428	86.0*	20	nu
Pineapple. Ananas comosus -cannery residue, dehy, (4) Pineapple bran	4-03-722	88.6	40	40
Plums. Prunus domestica -fruits, fresh, (4)	4-20-433	14.3	30	20
Potato. Solanum tuberosum -process residue, dehy, (4) Potato by-product, dried Potato pomace, dried Potato pulp, dried Potato waste, dried	4-03-775	88.4	50	25
-roots, baked dehy, (4)	4-20-153	86.4	50	30
-roots, cooked, (4)	4-03-784	24.3	50	30
-roots, dehy grnd, (4) Potato meal	4-07-850	91.1	50	30
-roots, fresh, (4)	4-03-787	22.8	30	30
Poultry -feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5) Hydrolyzed poultry feathers (AAFCO) Feather meal	5-03-795	92.7	5	nu
-viscera w feet w heads, dry or wet rendered dehy grnd, (5) Poultry by-product meal (CFA)	5-03-799	93.0	10	nu

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dariy cattle lactating
		%	%	%
Pricklypear. *Opuntia spp*				
-aerial part, fresh, (2)	2-01-061	16.8	10	nu
Prunes. *Prunus domestica*				
-fruit, fresh, (4)	4-20-359	14.3	30	20
-fruit, dehy grnd, (4)	4-20-435	90.0	30	20
-fruit wo pits, dehy, (4)	4-20-434	90.0	30	20
Pumpkins. *Cucurbita pepo*				
-fruit, fresh, (4)	4-03-815	9.1	20	10
Ramie. *Boehmeria nivea*				
-leaves, dehy grnd, (1)	1-03-857	90.0	10	10
Rape. *Brassica spp*				
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	15	10
Rice. *Oryza sativa*				
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8	25	25
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	25	25
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	50	25

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List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis) Beef cattle finishing	Dairy cattle lactating
		%	%	%
-polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	25	25
Rubbertree, para. *Hevea, brasiliensis*				
-seeds, extn unspecified caked, (5)	5-20-147	86.0*	10	10
Rutabagas. *Brassica napobrassica*				
-roots, fresh, (4)	4-04-001	11.4	30	20
Rye. *Secale cereale*				
-straw, (1)	1-04-007	91.0	10	nu
-flour by-product, coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2	50	25
-grain, (4)	4-04-047	88.8	75	40
-distillers grains, dehy, (5) Rye distillers dried grains (CFA) Rye distillers dried grains (AAFCO)	5-04-023	93.0	40	25
Ryegrass, Italian. *Lolium multiflorum*				
-Italian, aerial part, fresh, (2)	2-04-073	21.4	25	70
Safflower. *Carthamus tinctorius*				
-seeds, (4)	4-07-958	92.7	10	nu
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7	15	20
Sage, black. *Salvia mellifera*				
-black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu	nu

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
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		%	%	%
Sesame. Sesmum indicum				
-seeds, mech extd grnd, (5)	5-04-220	92.7	15	20
Silkworm.				
-pupae, dehy grnd, (5)	5-20-421	90.0	nu	nu
Shrimp				
-process residue, dehy grnd, (5)	5-13-541	90.0	nu	nu
Sorghum. *Sorghum vulgare*				
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	25	50
Sorghum, feterita. *Sorghum, vulgare*				
-grain, (4)	4-04-369	88.6	80	40
Sorghum, grain variety. *Sorghum vulgare*				
-aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	25	50
-grain, (4)	4-04-383	88.5	80	40
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	40	25
Sorghum, hegari. *Sorghum, vulgare*				
-grain, (4)	4-04-398	89.0	80	40
Sorghum, Johnsongrass. *Sorghum halepense*				
-hay, s-c, (1)	1-04-407	90.5	25	60
Sorghum, kafir. *Sorghum vulgare, caffrorum*				
-grain, (4)	4-04-428	89.2	80	40

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List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Sorghum, kaoliang. *Sorghum, vulgare nervosum*				
-grain, (4)	4-04-431	88.7	80	40
Sorghum, milo. *Sorghum vulgare, subglabrescens*				
-grain, (4)	4-04-444	89.0	80	40
Sorghum, sorgo. *Sorghum vulgare, saccharatum*				
-aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	80	50
Soybean. *Glycine max*				
-hay, s-c, (1)	1-04-558	88.9	10	40
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0	20	10
-straw, (1)	1-04-567	87.7	10	nu
-aerial part, ensiled, (3)	3-04-581	27.2	25	40
-seeds, (5)	5-04-610	90.6	10	25
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	15	25
Spleens. see Cattle				
Squirreltail. *Sitanion spp*				
-aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu
Sugarcane. *Saccharum officinarum*				
-molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5	20	10

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	20	10
Sunflower. Helianthus spp -seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0	30	20
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8	15	25
Sweetclover, yellow. Melilotus officinalis -yellow, seed screenings, (5)	5-08-007	87.3	10	nu
Swine. Sus scrofa -lard, (4) Lard	4-04-790	100.0*	5	3
Timothy. Phleum Pratense -hay, s-c, late vegetative, (1)	1-04-881	87.0	20	60
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	20	60
-aerial part, ensiled, (3)	3-04-922	33.5	20	40
- Tomato. Lycopersicon esculentum -pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	25	25
-pulp, wet, (5)	5-05-042	25.0	20	10
Turnip. Brassica rapa -roots, fresh, (4)	4-05-067	9.6	20	10
Vetch. Vicia spp -hay, s-c, (1)	1-05-106	88.2	25	60

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Walnuts. Juglans spp				
-meats w shells, grnd, (4)	4-20-129	93.2	20	5
Watergrass. Hydrochloa caroliniensis				
-seeds, (4)	4-20-128	90.0	20	10
Wheat. Triticum spp				
-hay, s-c, (1)	1-05-172	89.7	25	60
-straw, (1)	1-05-175	90.9	10	10
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	25	70
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	25	25
-grain, (4)	4-05-211	88.5	50	50
-grain screenings, (4)	4-05-216	88.9	40	25
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	20	20
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*	5	nu
Wheatgrass. Agropyron spp				
-aerial part, fresh, mature, (2)	2-05-363	60.5	10	10
Wheatgrass, crested. Agropyron cristatum				
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	25	30
Whey. see Cattle				

Table 10. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to cattle	International reference number	Dry matter	Amount of feed (dry basis)	
			Beef cattle finishing	Dairy cattle lactating
		%	%	%
Yeast, active. Saccharomyces cerevisiae -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	5	5
Yeast, brewers Saccharomyces. Saccharomyces cerevisiae -brewers saccharomyces, dehy gr d, (7) Brewers dried yeast (CFA)	7-05-528	93.4	5	5
Yeast, primary Saccharomyces. Saccharomyces cerevisiae -primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9	5	5

*Dry matter was estimated

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Table 11. Daily dry matter intake of pullets (grower diet)

	Age of growing animal (weeks)					
	3	5.5	7.5	9.5	11.5	13.8
Bldy weight, g	250	500	750	1,000	1,250	1,500
Total daily feed (dry basis), g	24	40	51	58	71	76

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[a] Adapted from National Research Council. Nutrient requirements of Poultry. 1971. Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

Table 12. Daily dry matter intake of laying hens (single comb white leghorns and similar breeds)[a]

	Maintenance	Laying 60% production
Body weight g	1800	1800
Total daily feed dry basis g	63	99

[a] Adapted from National Research Council. Nutrient requirements of poultry. 1971. Printing and Publishing Office, National Academy of Science, 2101 Constitution Avenue, Washington, D.C.

Table 13: Daily dry matter intake of broilers (chickens)[a]

	Age of growing animal (weeks)				
	2.2	3.7	4.7	5.6	7.5
Body weight, g	250	500	750	1000	1500
Total daily feed (dry basis), g	32	51	66	76	90

[a] Adapted from National Research Council. Nutrient requirements of poultry. 1971. Printing and publishing office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Alfalfa. *Medicago sativa*					
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	20	5	5
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5	20	5	5
-hay, s-c, early bloom, (1)	1-00-059	90.1	nu	nu	nu
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	20	5	nu
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	nu	nu	nu
-aerial part, ensiled, (3)	3-00-212	27.3	nu	nu	nu
-seed screenings, (5)	5-08-326	90.3	20	20	20
Almond. *Prunus amygdalus*					
-hulls, (4)	4-00-359	88.4	nu	nu	nu
Animal					
-blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	5	4	2
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	5	7	5
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	5	7	5
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	2	2	2
Apples. Malus spp					
-fruit, fresh, (4)	4-00-421	15.9	1.5	1.5	1
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	nu	nu	nu
-pulp wo seeds wo skins, dehy. (4)	4-15-302	87.5	5	5	5
Apricots. Prunus armeniaca					
-fruit, fresh, (4)	4-20-438	14.6	1.5	1.5	1
-fruit wo pits, dehy, (4)	4-15-311	90.0	5	5	5
Artichoke. Cynera scolymus					
-roots, fresh, (4)	4-00-430	20.5	nu	nu	nu
Asparagus. Asparagus officinalis					
-stem butts, fresh, (2)	2-00-436	91.0	5	5	5
Avocado. Persea americana					
-fruit wo pits, grnd, (4)	4-15-312	91.4	5	5	5
Babassu. Orbignya spp					
-kernels, extn unspecified grnd, (5)	5-00-453	92.7	10	10	5

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Bakery					
-refuse, dehy, (4)	4-20-419	90.0	20	20	20
Banana. Musa spp					
-fruit, fresh, (4)	4-00-485	24.3	2.5	2.5	1.5
-peelings, dehy, grnd, (4)	4-00-486	88.0	nu	nu	nu
Barley. Hordeum vulgare					
-hay, s-c, (1)	1-00-495	88.5	nu	nu	nu
-straw, (1)	1-00-498	91.7	nu	nu	nu
-grain screenings, (4)	4-00-542	88.9	nu	nu	nu
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	50	50	10
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3	20	15	1
Bean. Phaseolus spp					
-straw, (1)	1-00-585	88.4	nu	nu	nu
-cannery residue, fresh (2)	2-00-587	9.4	5	nu	nu
Bean, kidney. Phaseolus vulgaris					
-kidney, seeds, (5)	5-00-600	88.9	nu	nu	nu
Bean, lima. Phaseolus limensis					
-seeds, (4) Butter bean	4-15-317	90.0	5	5	2
Bean, mung. Phaseolus aureus					
-seeds, (5)	5-08-185	90.0	15	15	5
Bean, navy. Phasiolus vulgaris					
-seeds, (5)	5-00-623	89.7	nu	nu	nu
Beet, mangels. Beta spp					
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Beet, common. Beta vulgaris					
-leaves, dehy, (1)	1-20-418	90.0	5	5	5
Beet, sugar. Beta saccharifera					
-straw, (1)	1-00-644	81.6	nu	nu	nu
-hulls, (1)	1-00-643	85.3	nu	nu	nu
-sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	nu	nu	nu
-crowns, fresh, (4)	4-00-648	18.0	nu	nu	nu
-root tips (4)	4-20-436	19.2*	nu	nu	nu
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1	4	4	2
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	nu	nu	nu
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	nu	nu	nu
Bermudagrass. Cynodon dactylon					
-hay, s-c, (1)	1-00-703	90.9	nu	nu	nu
-aerial part, fresh, (2)	2-00-712	28.9	nu	nu	nu
Bermudagrass, coastal. Cynodon dactylon					
-coastal, hay, s-c, (1)	1-00-716	91.0	nu	nu	5
Blood. see Animal					
Bluegrass, Kentucky. Poa pratensis					
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Bluestem. Andropogon spp -aerial part, fresh, early vegetative, (2)	2-00-821	26.8	nu	nu	nu
Bread, white. -enriched, (4)	4-08-359	64.1	20	20	20
Broccoli. Brassica oleracea botrytis -aerial part, dehy, (4)	4-20-417	90.0	1	1	1
stems, fresh, (4)	4-00-884	45.1	nu	nu	nu
Brome, cheatgrass. Bromus tectorum -cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	nu	nu	nu
Brome, smooth. Bromus inermis -smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	nu	nu	nu
Brussel, sprouts. Brassica oleracea gemmifera -heads fresh, (4)	4-08-187	14.8	nu	nu	nu
Buckwheat. Fagopyrum spp -grain, (4)	4-00-394	87.8	5	5	nu
-flour by-product wo hulls,coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7	5	5	nu
Buffalograss. Buchloe dactyloides -aerial part, fresh, (2)	2-01-010	45.8	nu	nu	nu
Burclover. Medicago, lispida -seeds, (4)	4-20-113	93.4	5	5	2
Buttermilk. see Cattle					

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Cabbage. *Brassica oleracea, capitata*					
-aerial part, fresh, (4)	4-01-046	9.4	nu	nu	nu
-aerial part, dehy, (4)	4-15-314	88.3	5	5	5
-cannery residue, (4)	4-15-313	15.8	1.5	1.5	1
Carob bean. *Ceratonia siliqua*					
-seeds, (5)	5-09-306	81.2	20	20	20
Carrot. *Daucus spp*					
-leaves, fresh, (4)	4-01-143	16.5	nu	nu	nu
-pulp, wet grnd, (4)	4-15-315	14.0	1.5	1.5	1
-roots, dehy, (4)	4-20-148	90.0	5	5	5
-roots, fresh, (4)	4-01-145	11.9	nu	nu	nu
Casein. see Cattle					
Cassava. *Manihot spp*					
-starch by-product, dehy, (4)	4-08-572	90.0	20	10	10
Castorbean. *Ricinus communis*					
-seeds, extn unspecified grnd, (5)	5-20-420	90.0	15	15	10
Castor bean meal					
Cattle, *Bos spp*					
-whey, dehy, mn 65% lactose, (4)	4-01-182	92.8	3	4	3
Dried whey (AAFCO)					
Whey, dried					

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	nu	nu	nu
-casein, milk acid precipitated dehy. mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	3	3	3
-cheese rind, (5)	5-01-163	82.8	10	10	10
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	3	4	2
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	3	3	3
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	3	3	3

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-cottage, cheese, (5)	5-08-001	21.0	2	2	nu
-manure, dehy grnd, (7)	7-01-190	93.5	10	15	nu
Cauliflower. *Brassica aleracea botrytis*					
-heads, fresh, (4)	4-08-189	9.0	1	1	1
Celery. *Apium graveolens*					
-aerial part, fresh, (4)	4-01-195	5.9	1	1	1
-stalks, fresh, (4)	4-01-197	6.3	1	1	1
-stalks, dehy, (4)	4-15-316	90.0	5	5	2.5
Chicken. *Gallus domesticus*					
-gizzards, raw, (5)	5-07-948	25.0	nu	nu	nu
-manure, dehy, (5)	5-20-423	90.0	10	10	5
Chicken, broiler. *Gallus, domesticus*					
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	5	5	3
-manure w shavings added, dehy, (5)	5-20-425	91.0*	5	5	3
Citrus. *Citrus spp*					
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	nu	nu	nu
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9	nu	nu	nu
Citrus, grapefruit. *Citrus paradisi*					
-fruit, fresh, (4)	4-01-242	13.6	nu	nu	nu
-pulp, shredded, wet, (4)	4-01-243	14	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Citrus, lemon. *Citrus limon*					
-pulp, (4)	4-11-753	92.8	nu	nu	nu
Citrus, orange. *Citrus sinensis*					
-pulp, ensiled, (3)	3-01-250	11.3	nu	nu	nu
-fruit, fresh, cull, (4)	4-01-252	12.8	nu	nu	nu
-cannery residue, dehy, (4)	4-15-318	90.6	nu	nu	nu
-pulp, shredded wet, (4)	4-01-253	14.4	nu	nu	nu
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	nu	nu	nu
Clover, alsike. *Trifolium hybridum*					
-alsike, hay, s-c, (1)	1-01-313	87.7	nu	nu	nu
-alsike, aerial part, fresh, (2)	2-01-316	22.4	nu	nu	nu
Clover, crimson. *Trifolium incarnatum*					
-crimson, hay, s-c, (1)	1-01-328	88.9	nu	nu	nu
-crimson, aerial part, fresh, (2)	2-01-336	17.6	nu	nu	nu
Clover, ladino. Trifolium repens					
-ladino, hay, s-c, (1)	1-01-378	89.5	nu	nu	nu
-ladino, aerial part, fresh, (2)	2-01-383	17.7	nu	nu	nu
Clover, red. *Trifolium pratense*					
-red, hay, s-c, (1)	1-01-415	79.5	nu	nu	nu
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	nu	nu	nu
-red, seeds, (5)	5-08-004	87.9	nu	nu	nu
-red, seed screenings, (5)	5-08-005	90.3	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter %	Amount of feed (dry basis) Pullets (grower diet) %	Laying hens %	Broilers %
Coconut. *Cocos nucifera*					
-meats, mech extd grnd, (5) Coconut meal, mechanical extracted (AAFCO) Copra meal, mechanical extracted (AAFCO)	5-01-572	92.8	10	10	5
Coffee. *Coffea spp*					
-hulls, (1)	1-11-479	90.0	nu	nu	nu
Corn. *Zea mays*					
-aerial part, s-c, mature, (1)	1-02-772	68.1	nu	nu	nu
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	nu	nu	nu
-cobs, grnd, (1) Ground corn cob (AAFCO)	1-02-782	89.8	nu	nu	nu
-aerial part, ensiled, (3) Corn fodder silage	3-02-822	23.7	nu	nu	nu
-ears w husks, ensiled, (3)	3-02-839	43.4*	nu	nu	nu
-ears, grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	10	nu	nu
-grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	60	60	50
-distillers grains, dehy, (5) Corn distillers dried grains (CFA) Corn distillers dried grains (AAFCO)	5-02-842	93.1	30	20	5

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	5	5	3
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	20	10	5
Corn, dent yellow. Zea mays, indentata					
-dent yellow, grain, (4)	4-02-935	87.0	70	70	60
Cottage cheese. see Cattle					
Cotton. Gossypium spp					
-bolls, s-c, (1)	1-01-596	91.8	nu	nu	nu
-gin by-product, (1)	1-08-413	90.5	nu	nu	nu
-hulls, (1) cottonseed hulls (AAFCO)	1-01-599	90.8	nu	nu	nu
-hulls wo lint, (1)	1-01-600	90.9	nu	nu	nu
-seeds, grnd, (5)	5-01-608	92.7	nu	nu	nu
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	10	5	10
Cowpea. Vigna Spp					
-hay, s-c, (1)	1-01-645	90.4	nu	nu	nu
-seeds, (5) Blackeye bean	5-01-661	89.0	10	10	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Crab. Callinectes sapidus, Cancer spp Paralithodes camschatica					
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	5	5	3
Dates. Phoenix dactylifera					
-fruit, dehy, (4)	4-01-752	91.9	10	10	10
Deervetch, birdsfoot. Lotus corniculatus					
-birdsfoot, hay, s-c, (1)	1-05-044	89.7	nu	nu	nu
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	nu	nu	nu
Distillers grains. see Corn; see Grains; see Rye					
Distillers solubles. see Corn					
Digester tankage. see Animal					
Emmer. Triticum dicoccum					
-grain, (4)	4-01-830	90.8	25	20	5
Fenugreek. Trigonella foenumgraecum					
-seeds, (8)	8-01-856	90.7	25	5	25
Fescue, alta. Festuca arundinacea					
-alta, aerial part, fresh, (2)	2-01-889	23.9	nu	nu	nu
Fescue, meadow. Festuca elatior					
-meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	nu	nu	nu
-meadow, aerial part, fresh, (2)	2-01-920	28.6	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Fig, common. Ficus carica -fruit, dehy, (4)	4-01-955	76.0	10	10	10
Fish -stickwater solubles, cooked dehy, mn 60% protein, (5) Dried fish solubles (AAFCO)	5-01-971	92.3	2.5	2.5	2
oil, (7) Blended fish oil (CFA) Fish oil (AAFCO)	7-01-965	100.0*	nu	nu	1
Fish, anchovy. Engraulis spp -anchovy, whole or cuttings, cooked mech extd dehy grnd, (5) Fish meal, anchovy	5-01-985	92.0	10	10	10
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family)					
-white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5) White fish meal (CFA) Fish, cod, meal Fish, cusk, meal Fish, haddock, meal Fish, hake, meal Fish, pollock, meal Fish, monkfish, meal Fish, skate, meal	5-02-025	91.0	10	10	10
Flax, common. Linum usitatissimum -fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	nu	nu	nu
-hulls, (1)	1-02-037	92.0	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diets)	Laying hens	Broilers
		%	%	%	%
-common, seed screenings, (4)	4-02-056	91.4	nu	nu	nu
-common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	3	3	nu
-seeds, (5)	5-02-052	90.8	3	3	3
Fly. Mesca domestica					
-pupae, dehy grnd, (5)	5-20-422	90.0	10	10	10
Gamagrass, eastern. Tripsacum dactyloides					
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	nu	nu	nu
Gamagrass, Florida. Tripsacum floridanum					
-Florida, hay, s-c, (1)	1-02-087	92.3	nu	nu	nu
Garbage.					
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	5	5	5
Grains.					
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0	10	10	nu
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1	nu	nu	nu
-distillers grains, dehy, (5)	5-02-144	92.6	20	15	5

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Grama. Bouteloua spp					
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	nu	nu	nu
-aerial part, fresh, mature, (2)	2-02-166	63.4	nu	nu	nu
Grapes. Vitis spp					
-fruit, dehy, (4)	4-02-203	84.8	30	30	30
-fruit, dehy, cull, (4)	4-08-427	84.8	5	5	5
-fruit, fresh, (4)	4-02-204	18.1	2	2	2
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	5	5	5
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5	3	3	2
-raisin syrup by-product, (4)	4-08-428	89.4	30	30	30
-seeds, (4)	4-20-133	85.0	nu	nu	nu
-seeds, dehy grnd, (4)	4-08-082	90.0	3	3	3
Guar. Cyamopsis tetragonoloba					
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	15	15	15
Hemp. Cannabis sativa					
-seeds, (5)	5-20-136	91.1	5	5	5
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	5	5	5
Hominy feed. see Corn grits by-product					
Hops. Humulus spp					
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1			
Ipilipil. Leucaena leuocephala					
-leaves, dehy grnd, (4)	4-20-446	91.0	3	3	2

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Kale. *Brassica oleracea acephala*					
-aerial part, fresh (2)	2-02-446	11.6	1	1	1
Lespedeza. *Lespedeza spp*					
-hay, s-c, midbloom, (1)	1-02-511	94.1	nu	nu	nu
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	nu	nu	nu
Lettuce. *Lactuca sativa*					
-aerial part, dehy grnd, (4)	4-15-319	90.0	5	5	5
-aerial part, fresh, (2)	2-02-624	5.3	1	1	1
-refuse, dehy, (4)	4-15-320	90.0	5	5	2.5
Livers. see Animal; see Cattle					
Lobster. *Homarus americanus*					
-process residue, dehy grnd, (5)	5-02-635	90.0	4	4	4
Locust					
-seeds, (5)	5-20-429	90.8	5	5	2
Manure. see Cattle					
Meat meal. see Animal					
Meat meal tankage. see Animal					
Melons, pie. *Curcurbita spp*					
-fruit w seeds, fresh, (4)	4-08-459	4.1	1	1	1
Mesquite. *Prosopis spp*					
-seeds w pods, s-c, (1)	1-15-321	91.5	nu	nu	nu
Milk. see Cattle					
Millet. *Setaria spp*					
-grain, (4)	4-03-098	89.9	50	50	20

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Molasses. see Beet; see Sugarcane; see Citrus					
Mustard. Brassica spp					
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	15	15	15
Napiergrass. Pennisetum purpureum					
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	nu	nu	nu
Nectarine. Prunus persica nectarina					
-fruit, fresh, (4)	4-20-430	15.8*	nu	nu	nu
Oak. Querus spp					
-acorns, (4)	4-07-755	70.7	5	10	nu
Oats. Avena sativa					
-hay, s-c, (1)	1-03-280	90.5	nu	nu	nu
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	15	nu	nu
-straw, (1)	1-03-283	92.1	nu	nu	nu
-aerial part, ensiled, (3)	3-03-298	31.0	nu	nu	nu
-grain, (4)	4-03-309	89.7	50	20	10
Oats, wild. Avena fatua					
-wild, grain, (4)	4-03-394	91.0	5	nu	nu
Olives. Olea europaea					
-cannery residue, (4)	4-15-323	91.7	5	5	5
-pulp, dehy, (4)	4-15-322	93.5	5	5	5
Onion. Allium spp					
-refuse, dehy, (1)	1-15-325	89.4	5	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-seed screenings, (4)	4-15-324	89.1	5	nu	nu
Orchardgrass. Dactylis glomerata					
-hay, s-c, (1)	1-03-438	88.7	nu	nu	nu
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	nu	nu	nu
Palm. Elaeis spp					
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	15	25	15
Parsnip. Pastinaca sativa					
-roots, fresh, (4)	4-03-536	13.7	1	1	1
Pea. Pisum spp					
-split pea by-product, grnd, (1)	1-08-478	89.5	40	40	10
-straw, (1)	1-03-577	84.7	nu	nu	nu
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	nu	nu	nu
-seeds, dehy, (5)	5-20-135	90.5	40	40	10
-seeds, grnd, (5)	5-03-598	89.1	10	10	5
Peaches, Prunus persica					
-fruit, fresh, (4)	4-20-432	13.1	1		1
-fruit wo pits, dehy, (4)	4-13-452	90.0	5	[illegible]	5
Peanut. Arachis hypogaea					
-hulls, grnd, (1)	1-03-629	94.4	nu	nu	nu
-hay, s-c, (1)	1-03-619	91.6	nu	nu	nu
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	10	10	4

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-kernels w skins w hulls, (5)	5-03-653	93.4	5	5	2
Pears. Pyrus spp					
-fruit, fresh, (4)	4-03-660	17.3	1.5	1.5	1.5
Pecan. Carya illinoinsis					
-shells, grnd, (1)	1-20-428	86.0*	nu	nu	nu
Pineapple. Ananas comosus					
-cannery residue, dehy, (4)	4-03-722	88.6	5	5	nu
Pineapple bran					
Plums. Prunus domestica					
-fruits, fresh, (4)	4-20-433	14.3	1.5	1.5	1
Potato. Solanum tuberosum					
-process residue, dehy, (4)	4-03-775	88.4	10	10	nu
Potato by-product, dried					
Potato pomace, dried					
Potato pulp, dried					
Potato waste, dried					
-roots, baked dehy, (4)	4-20-153	86.4	20	20	5
-roots, cooked, (4)	4-03-784	24.3	nu	nu	nu
-roots, dehy grnd, (4)	4-07-850	91.1	10	10	nu
Potato meal					
-roots, fresh, (4)	4-03-787	22.8	nu	[illegible]	nu
Poultry					
-feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5)	5-03-795	92.7	2	2	3
Hydrolyzed poultry feathers (AAFCO)					
Feather meal					
-viscera w feet w heads, dry or wet rendered dehy grnd, (5)	5-03-799	93.0	7	5	8
Poultry by-product meal (CFA)					

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Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Pricklypear. *Opuntia spp*					
-aerial part, fresh, (2)	2-01-061	16.8	nu	nu	nu
Prunes. *Prunus domestica*					
-fruit, fresh, (4)	4-20-359	14.3	1.5	1.5	1
-fruit, dehy grnd, (4)	4-20-435	90.0	5	5	nu
-fruit wo pits, dehy, (4)	4-20-434	90.0	10	10	5
Pumpkins. *Cucurbita pepo*					
-fruit, fresh, (4)	4-03-815	9.1	5	5	5
Ramie. *Boehmeria nivea*					
-leaves, dehy grnd, (1)	1-03-857	90.0	2	3	1
Rape. *Brassica spp*					
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	5	2	5
Rice. *Oryza sativa*					
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8	10	nu	nu
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	10	20	5
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	10	20	30

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
-polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	10	20	10
Rubbertree, para. Hevea, brasiliensis -seeds, extn unspecified caked, (5)	5-20-147	86.0*	5	5	5
Rutabagas. Brassica napobrassica -roots, fresh, (4)	4-04-001	11.4	1	1	1
Rye. Secale cereale -straw, (1)	1-04-007	91.0	nu	nu	nu
-flour by-product, coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2	nu	nu	nu
-grain, (4)	4-04-047	88.8	5	5	nu
-distillers grains, dehy, (5) Rye distillers dried grains (CFA) Rye distillers dried grains (AAFCO)	5-04-023	93.0	2.5	2.5	nu
Ryegrass, Italian. Lolium multiflorum -Italian, aerial part, fresh, (2)	2-04-073	21.4	nu	nu	nu
Safflower. Carthamus tinctorius -seeds, (4)	4-07-958	92.7	5	5	nu
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7	5	5	3
Sage, black. Salvia mellifera -black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Sesame. Sesmum indicum					
-seeds, mech extd grnd, (5)	5-04-220	92.7	10	10	15
Silkworm. -pupae, dehy grnd, (5)	5-20-421	90.0	10	10	10
Shrimp -process residue, dehy grnd, (5)	5-13-541	90.0	5	5	5
Sorghum. *Sorghum vulgare* -aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	nu	nu	nu
Sorghum, feterita. *Sorghum, vulgare* -grain, (4)	4-04-369	88.6	60	60	60
Sorghum, grain variety. *Sorghum vulgare* -aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	nu	nu	nu
-grain, (4)	4-04-383	88.5	50	50	30
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	30	20	5
Sorghum, hegari. *Sorghum, vulgare* -grain, (4)	4-04-398	89.0	50	50	50
Sorghum, Johnsongrass. *Sorghum halepense* -hay, s-c, (1)	1-04-407	90.5	nu	nu	nu
Sorghum, kafir. *Sorghum vulgare, caffrorum* -grain, (4)	4-04-428	89.2	50	50	25

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Sorghum, kaoliang. Sorghum, vulgare nervosum -grain, (4)	4-04-431	88.7	60	60	60
Sorghum, milo. Sorghum vulgare, subglabrescens -grain. (4)	4-04-444	89.0	50	50	25
Sorghum, sorgo. Sorghum vulgare, saccharatum -aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	nu	nu	nu
Soybean. Glycine max -hay, s-c, (1)	1-04-558	88.9	nu	nu	nu
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0	10	nu	nu
-straw, (1)	1-04-567	87.7	nu	nu	nu
-aerial part, ensiled, (3)	3-04-581	27.2	nu	nu	nu
-seeds, (5)	5-04-610	90.6	15	51	20
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	20	20	30
Spleens. see Cattle					
Squirreltail. Sitanion spp -aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu	nu
Sugarcane. Saccharum officinarum -molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5	4	4	2

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	4	4	2
Sunflower. Helianthus spp					
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0	15	15	15
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8	10	5	4
Sweetclover, yellow. Melilotus officinalis					
-yellow, seed screenings, (5)	5-08-007	87.3	nu	nu	nu
Swine. Sus scrofa					
-lard, (4) Lard	4-04-790	100.0*	2	2	8
Timothy. Phleum Pratense					
-hay, s-c, late vegetative, (1)	1-04-881	87.0	nu	nu	nu
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	nu	nu	nu
-aerial part, ensiled, (3)	3-04-922	33.5	nu	nu	nu
Tomato. Lycopersicon esculentum					
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	nu	nu	nu
-pulp, wet, (5)	5-05-042	25.0	2	2	1
Turnip. Brassica rapa					
-roots, fresh, (4)	4-05-067	9.6	nu	nu	nu
Vetch. Vicia spp					
-hay, s-c, (1)	1-05-106	88.2	nu	nu	nu

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis)		
			Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Walnuts. Juglans spp					
-meats w shells, grnd, (4)	4-20-129	93.2	5	5	2
Watergrass. Hydrochloa caroliniensis					
-seeds, (4)	4-20-128	90.0	50	50	50
Wheat. Triticum spp					
-hay, s-e, (1)	1-05-172	89.7	nu	nu	nu
-straw, (1)	1-05-175	90.9	nu	nu	nu
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	nu	nu	nu
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	15	5	nu
-grain, (4)	4-05-211	88.5	50	50	25
-grain screenings, (4)	4-05-216	88.9	50	40	60
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	3	3	3
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*	1	1	1
Wheatgrass. Agropyron spp					
-aerial part, fresh, mature, (2)	2-05-363	60.5	nu	nu	nu
Wheatgrass, crested. Agropyron cristatum					
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	nu	nu	nu
Whey. see Cattle					

Table 14. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to chickens	International reference number	Dry matter	Amount of feed (dry basis) Pullets (grower diet)	Laying hens	Broilers
		%	%	%	%
Yeast, active. *Saccharomyces cerevisiae* -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	2	2	2
Yeast, brewers Saccharomyces. *Saccharomyces cerevisiae* -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	2	2	2
Yeast, primary Saccharomyces. *Saccharomyces cerevisiae* -primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9	2	2	2

*Dry matter was estimated

Table 15. Daily dry matter intake of horses[a]

Body weight	Daily feed
kg	kg
Mature Horses at Rest (maintenance)	
200	3.00
400	5.04
500	5.96
600	6.83
Mature Horses at Light Work (2 hr/day)	
200	3.80
400	6.68
500	7.96
600	9.23
Mature Horses at Medium Work (2 hr/day)	
200	4.79
400	8.65
500	10.43
600	12.22
Mares, Last 90 Days of Pregnancy	
200	3.16
400	5.41
500	6.31
600	7.25
Mares, Peak of Lactation	
200	5.54
400	8.91
500	10.04
600	10.92

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[a] Adapted from National Research Council. Nutrient requirements of horses. 1973. Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

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Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Alfalfa. Medicago sativa			
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	40
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5	40
-hay, s-c, early bloom, (1)	1-00-059	90.1	100
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	100
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	100
-aerial part, ensiled, (3)	3-00-212	27.5	nu
-seed screenings, (5)	5-08-326	90.3	20
Almond. Prunus amygdalus -hulls, (4)	4-00-359	88.4	20
Animal			
-blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	nu
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	nu
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6	nu

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	nu
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	1
Apples. Malus spp			
-fruit, fresh, (4)	4-00-421	15.9	10
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	30
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	30
Apricots. Prunus armeniaca			
-fruit, fresh, (4)	4-20-438	14.6	10
-fruit wo pits, dehy, (4)	4-15-311	90.0	10
Artichoke. Cynera scolymus			
-roots, fresh, (4)	4-00-430	20.5	10
Asparagus. Asparagus officinalis			
-stem butts, fresh, (2)	2-00-436	91.0	20
Avocado. Persea americana			
-fruit wo pits, grnd, (4)	4-15-312	91.4	20
Babassu. Orbignya spp			
-kernels, extn unspecified grnd, (5)	5-00-453	92.7	20

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Bakery			
-refuse, dehy, (4)	4-20-419	90.0	20
Banana. Musa spp			
-fruit, fresh, (4)	4-00-485	24.3	10
-peelings, dehy, grnd, (4)	4-00-486	88.0	10
Barley. Hordeum vulgare			
-hay, s-c, (1)	1-00-495	90.5	100
-straw, (1)	1-00-498	91.7	10
-grain screenings, (4)	4-00-542	88.9	15
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	50
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3	10
Bean. Phaseolus spp			
-straw, (1)	1-00-585	88.4	20
-cannery residue, fresh (2)	2-00-587	9.4	20
Bean, kidney. Phaseolus vulgaris			
-kidney, seeds, (5)	5-00-600	88.9	10
Bean, lima. Phaseolus limensis			
-seeds, (4) Butter bean	4-15-317	90.0	10
Bean, mung. Phaseolus aureus			
-seeds, (5)	5-08-185	90.0	10
Bean, navy. Phasiolus vulgaris			
-seeds, (5)	5-00-623	89.7	10
Beet, mangels. Beta spp			
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	nu

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Beet, common. Beta vulgaris			
-leaves, dehy, (1)	1-20-418	90.0	20
Beet, sugar. Beta saccharifera			
-straw, (1)	1-00-644	81.6	20
-hulls, (1)	1-00-643	85.3	10
-sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	10
-crowns, fresh, (4)	4-00-648	18.0	10
-root tips (4)	4-20-436	19.2*	nu
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1	10
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	30
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	30
Bermudagrass. Cynodon dactylon			
-hay, s-c, (1)	1-00-703	90.9	100
-aerial part, fresh, (2)	2-00-712	28.9	100
Bermudagrass, coastal. Cynodon dactylon			
-coastal, hay, s-c, (1)	1-00-716	91.0	100
Blood. see Animal			
Bluegrass, Kentucky. Poa pratensis			
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	100

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Bluestem. Andropogon spp			
-aerial part, fresh, early vegetative, (2)	2-00-821	26.8	20
Bread, white.			
-enriched, (4)	4-08-359	64.1	20
Broccoli. Brassica oleracea botrytis			
-aerial part, dehy, (4)	4-20-417	90.0	10
stems, fresh, (4)	4-00-884	45.1	10
Brome, cheatgrass. Bromus tectorum			
-cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	nu
Brome, smooth. Bromus inermis			
-smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	100
Brussel, sprouts. Brassica oleracea gemmifera			
-heads, fresh, (4)	4-08-187	14.8	10
Buckwheat. Fagopyrum spp			
-grain, (4)	4-00-994	87.8	nu
-flour by-product wo hulls, coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7	nu
Buffalograss. Buchloe dactyloides			
-aerial part, fresh, (2)	2-01-010	45.8	nu
Burclover. Medicago, lispida			
-seeds, (4)	4-20-113	93.4	20
Buttermilk. see Cattle			

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Cabbage. Brassica oleracea, capitata			
-aerial part, fresh, (4)	4-01-046	9.4	20
-aerial part, dehy, (4)	4-15-314	88.3	10
-cannery residue, (4)	4-15-313	15.8	20
Carob bean. Ceratonia siliqua			
-seeds , (5)	5-09-306	81.2	20
Carrot. Daucus spp			
-leaves, fresh, (4)	4-01-143	16.5	10
-pulp, wet grnd, (4)	4-15-315	14.0	20
-roots, dehy, (4)	4-20-148	90.0	20
-roots, fresh, (4)	4-01-145	11.9	20
Casein. see Cattle			
Cassava. Manihot spp			
-starch by-product, dehy, (4)	4-08-572	90.0	20
Castorbean. Ricinus communis			
-seeds, extn unspecified grnd, (5) Castor bean meal	5-20-420	90.0	10
Cattle, Bos spp			
-whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	5

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	5
-casein, milk acid precipitated dehy. mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	10
-cheese rind, (5)	5-01-163	82.8	10
-livers, raw, (5) Beef liver	5-01-166	27.2	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	10
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	10
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	5

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
-cottage, cheese, (5)	5-08-001	21.0	nu
-manure, dehy grnd, (7)	7-01-190	93.5	nu
Cauliflower. *Brassica aleracea botrytis*			
-heads, fresh, (4)	4-08-189	9.0	20
Celery. *Apium graveolens*			
-aerial part, fresh, (4)	4-01-195	5.9	20
-stalks, fresh, (4)	4-01-197	6.3	20
-stalks, dehy, (4)	4-15-316	90.0	20
Chicken. *Gallus domesticus*			
-gizzards, raw, (5)	5-07-948	25.0	nu
-manure, dehy, (5)	5-20-423	90.0	nu
Chicken, broiler. *Gallus, domesticus*			
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	nu
-manure w shavings added, dehy, (5)	5-20-425	91.0*	nu
Citrus. *Citrus spp*			
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	20
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9	10
Citrus, grapefruit. *Citrus paradisi*			
-fruit, fresh, (4)	4-01-242	13.6	10
-pulp, shredded, wet, (4)	4-01-243	14	10

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Citrus, lemon. Citrus limon			
-pulp, (4)	4-11-753	92.8	10
Citrus, orange. Citrus sinensis			
-pulp, ensiled, (3)	3-01-250	11.3	10
-fruit, fresh, cull, (4)	4-01-252	12.8	10
-cannery residue, dehy, (4)	4-15-318	90.6	10
-pulp, shredded wet, (4)	4-01-253	14.4	10
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	10
Clover, alsike. Trifolium hybridum			
-alsike, hay, s-c, (1)	1-01-313	87.7	75
-alsike, aerial part, fresh, (2)	2-01-316	22.4	100
Clover, crimson. Trifolium incarnatum			
-crimson, hay, s-c, (1)	1-01-328	88.9	100
-crimson, aerial part, fresh, (2)	2-01-336	17.6	100
Clover, ladino. Trifolium repens			
-ladino, hay, s-c, (1)	1-01-378	89.5	75
-ladino, aerial part, fresh, (2)	2-01-383	17.7	100
Clover, red. Trifolium pratense			
-red, hay, s-c, (1)	1-01-415	79.5	100
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	100
-red, seeds, (5)	5-08-004	87.9	nu
-red, seed screenings, (5)	5-08-005	90.3	nu

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Coconut. *Cocos nucifera*			
-meats, mech extd grnd, (5)	5-01-572	92.8	15
Coconut meal, mechanical extracted (AAFCO)			
Copra meal, mechanical extracted (AAFCO)			
Coffee. *Coffea spp*			
-hulls, (1)	1-11-479	90.0	10
Corn. *Zea mays*			
-aerial part, s-c, mature, (1)	1-02-772	68.1	50
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	50
-cobs, grnd, (1)	1-02-782	89.8	10
Ground corn cob (AAFCO)			
-aerial part, ensiled, (3)	3-02-822	23.7	nu
Corn fodder silage			
-ears w husks, ensiled, (3)	3-02-839	43.4*	nu
-ears, grnd, (4)	4-02-849	85.1	70
Corn and cob meal (AAFCO)			
Ear corn chop (AAFCO)			
Ground ear corn (AAFCO)			
-grits by-product, mn 5% fat, (4)	4-02-887	89.8	20
Hominy feed (CFA)			
Hominy feed (AAFCO)			
-distillers grains, dehy, (5)	5-02-842	93.1	20
Corn distillers dried grains (CFA)			
Corn distillers dried grains (AAFCO)			

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	2
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	20
Corn, dent yellow. Zea mays, indentata			
-dent yellow, grain, (4)	4-02-935	87.0	50
Cottage cheese. see Cattle			
Cotton. Gossypium spp			
-bolls, s-c, (1)	1-01-596	91.8	nu
-gin by-product, (1)	1-08-413	90.5	10
-hulls, (1) cottonseed hulls (AAFCO)	1-01-599	90.8	10
-hulls wo lint, (1)	1-01-600	90.9	10
-seeds, grnd, (5)	5-01-608	92.7	10
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	15
Cowpea. Vigna Spp			
-hay, s-c, (1)	1-01-645	90.4	50
-seeds, (5) Blackeye bean	5-01-661	89.0	10

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Crab. Callinectes sapidus, Cancer spp Paralithodes camschatica			
-process residue, dehy grnd, [illegible] 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	nu
Dates. Phoenix dactylifera -fruit, dehy, (4)	4-01-752	91.9	20
Deervetch, birdsfoot. Lotus corniculatus -birdsfoot, hay, s-c, (1)	1-05-044	89.7	nu
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	nu
Distillers grains. see Corn; see Grains; see Rye			
Distillers solubles. see Corn			
Digester tankage. see Animal			
Emmer. Triticum dicoccum -grain, (4)	4-01-830	90.8	nu
Fenugreek. Trigonella foenumgraecum -seeds, (8)	8-01-856	90.7	5
Fescue, alta. Festuca arundinacea -alta, aerial part, fresh, (2)	2-01-889	23.9	75
Fescue, meadow. Festuca elatior -meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	75
-meadow, aerial part, fresh, (2)	2-01-920	28.6	75

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
Fig, common. Ficus carica			
-fruit, dehy, (4)	4-01-955	76.0	10
Fish			
-stickwater solubles, cooked dehy, mn 60% protein, (5)	5-01-971	92.3	nu
Dried fish solubles (AAFCO)			
oil, (7)	7-01-965	100.0*	nu
Blended fish oil (CFA)			
Fish oil (AAFCO)			
Fish, anchovy. Engraulis spp			
-anchovy, whole or cuttings, cooked mech extd dehy grnd, (5)	5-01-985	92.0	nu
Fish meal, anchovy			
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family)			
-white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5)	5-02-025	91.7	nu
White fish meal (CFA)			
Fish, cod, meal			
Fish, cusk, meal			
Fish, haddock, meal			
Fish, hake, meal			
Fish, pollock, meal			
Fish, monkfish, meal			
Fish, skate, meal			
Flax, common. Linum usitatissimum			
-fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	10
-hulls, (1)	1-02-037	92.0	10

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
-common, seed screenings, (4)	4-02-056	91.4	2
-common, seeds, solv exted grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	15
-seeds, (5)	5-02-052	90.8	15
Fly. Mesca domestica			
-pupae, dehy grnd, (5)	5-20-422	90.0	nu
Gamagrass, eastern. Tripsacum dactyloides			
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	100
Gamagrass, Florida. Tripsacum floridanum			
-Florida, hay, s-c, (1)	1-02-087	92.3	100
Garbage.			
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	10
Grains.			
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0	10
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1	10
-distillers grains, dehy, (5)	5-02-144	92.6	20

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Grama. Bouteloua spp			
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	100
-aerial part, fresh, mature, (2)	2-02-166	63.4	100
Grapes. Vitis spp			
-fruit, dehy, (4)	4-02-203	84.8	20
-fruit, dehy, cull, (4)	4-08-427	84.8	20
-fruit, fresh, (4)	4-02-204	18.1	20
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	20
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5	20
-raisin syrup by-product, (4)	4-08-428	89.4	20
-seeds, (4)	4-20-133	85.0	10
-seeds, dehy grnd, (4)	4-08-082	90.0	10
Guar. Cyamopsis tetragonoloba			
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	10
Hemp. Cannabis sativa			
-seeds, (5)	5-20-136	91.1	5
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	5
Hominy feed. see Corn grits by-product			
Hops. Humulus spp			
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1	nu
Ipilipil. Leucaena leucocephala			
-leaves, dehy grnd, (4)	4-20-446	91.0	nu

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List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
Kale. Brassica oleracea acephala			
-aerial part, fresh (2)	2-02-446	11.6	20
Lespedeza. Lespedeza spp			
-hay, s-c, midbloom, (1)	1-02-511	94.1	100
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	100
Lettuce. Lactuca sativa			
-aerial part, dehy grnd, (4)	4-15-319	90.0	20
-aerial part, fresh, (2)	2-02-624	5.3	30
-refuse, dehy, (4)	4-15-320	90.0	20
Livers. see Animal; see Cattle			
Lobster. Homarus americanus			
-process residue, dehy grnd, (5)	5-02-635	90.0	nu
Locust			
-seeds, (5)	5-20-429	90.8	20
Manure. see Cattle			
Meat meal. see Animal			
Meat meal tankage. see Animal			
Melons, pie. Curcurbita spp			
-fruit w seeds, fresh, (4)	4-08-459	4.1	10
Mesquite. Prosopis spp			
-seeds w pods, s-c, (1)	1-15-321	91.5	10
Milk. see Cattle			
Millet. Setaria spp			
-grain, (4)	4-03-098	89.9	20

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
Molasses. see Beet; see Sugarcane; see Citrus			
Mustard. *Brassica spp*			
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	5
Napiergrass. *Pennisetum purpureum*			
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	100
Nectarine. *Prunus persica nectarina*			
-fruit, fresh, (4)	4-20-430	15.8*	10
Oak. *Querus spp*			
-acorns, (4)	4-07-755	70.7	10
Oats. *Avena sativa*			
-hay, s-c, (1)	1-03-280	90.5	100
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	20
-straw, (1)	1-03-283	92.1	10
-aerial part, ensiled, (3)	3-03-298	31.0	nu
-grain, (4)	4-03-309	89.7	50
Oats, wild. *Avena fatua*			
-wild, grain, (4)	4-03-394	91.0	25
Olives. *Olea europaea*			
-cannery residue, (4)	4-15-323	91.7	20
-pulp, dehy, (4)	4-15-322	93.5	20
Onion. *Allium spp*			
-refuse, dehy, (1)	1-15-325	89.4	10

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
-seed screenings, (4)	4-15-324	89.1	10
Orchardgrass. Dactylis glomerata			
-hay, s-c, (1)	1-03-438	88.7	100
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	100
Palm. Elaeis spp			
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	15
Parsnip. Pastinaca sativa			
-roots, fresh, (4)	4-03-536	13.7	20
Pea. Pisum spp			
-split pea by-product, grnd, (1)	1-08-478	89.5	20
-straw, (1)	1-03-577	84.7	10
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	nu
-seeds, dehy, (5)	5-20-135	90.5	20
-seeds, grnd, (5)	5-03-598	89.1	20
Peaches, Prunus persica			
-fruit, fresh, (4)	4-20-432	13.1	10
-fruit wo pits, dehy, (4)	4-13-452	90.0	20
Peanut. Arachis hypogaea			
-hulls, grnd, (1)	1-03-629	94.4	25
-hay, s-c, (1)	1-03-619	91.6	nu
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	15

Table 16. Maximum amount of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
-kernels w skins w hulls, (5)	5-03-653	93.4	10
Pears. Pyrus spp -fruit, fresh, (4)	4-03-660	17.3	20
Pecan. Carya illinoinsis -shells, grnd, (1)	1-20-428	86.0*	10
Pineapple. Ananas comosus -cannery residue, dehy, (4) Pineapple bran	4-03-722	88.6	20
Plums. Prunus domestica -fruits, fresh, (4)	4-20-433	14.3	10
Potato. Solanum tuberosum -process residue, dehy, (4) Potato by-product, dried Potato pomace, dried Potato pulp, dried Potato waste, dried	4-03-775	88.4	30
-roots, baked dehy, (4)	4-20-153	86.4	30
-roots, cooked, (4)	4-03-784	24.3	nu
-roots, dehy grnd, (4) Potato meal	4-07-850	91.1	30
-roots, fresh, (4)	4-03-787	22.8	nu
Poultry -feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5) Hydrolyzed poultry feathers (AAFCO) Feather meal	5-03-795	92.7	nu
-viscera w feet w heads, dry or wet rendered dehy grnd, (5) Poultry by-product meal (CFA)	5-03-799	93.0	nu

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Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Pricklypear. Opuntia spp.			
-aerial part, fresh, (2)	2-01-061	16.8	nu
Prunes. Prunus domestica			
-fruit, fresh, (4)	4-20-559	14.3	10
-fruit, dehy grnd, (4)	4-20-435	90.0	20
-fruit wo pits, dehy, (4)	4-20-434	90.0	20
Pumpkins. Cucurbita pepo			
-fruit, fresh, (4)	4-03-815	9.1	10
Ramie. Boehmeria nivea			
-leaves, dehy grnd, (1)	1-03-857	90.0	10
Rape. Brassica spp.			
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	10
Rice. Oryza sativa			
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8	20
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	30
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	30

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
-polishings, dehy, (4)	4-03-943	90.2	5
Rice polish (CFA)			
Rice polishings (AAFCO)			
Rubbertree, para. *Hevea, brasiliensis*			
-seeds, extn unspecified caked, (5)	5-20-147	86.0*	nu
Rutabagas. *Brassica napobrassica*			
-roots, fresh, (4)	4-04-001	11.4	20
Rye. *Secale cereale*			
-straw, (1)	1-04-007	91.0	10
-flour by-product, coarse sifted, mx 8.5% fiber, (4)	4-04-031	89.2	10
Rye middlings (AAFCO)			
-grain, (4)	4-04-047	88.8	10
-distillers grains, dehy, (5)	5-04-023	93.0	10
Rye distillers dried grains (CFA)			
Rye distillers dried grains (AAFCO)			
Ryegrass, Italian. *Lolium multiflorum*			
-Italian, aerial part, fresh, (2)	2-04-073	21.4	100
Safflower. *Carthamus tinctorius*			
-seeds, (4)	4-07-958	92.7	5
-seeds, mech extd grnd, (5)	5-04-109	91.7	15
Safflower seed, mechanical extracted (AAFCO)			
Sage, black. *Salvia mellifera*			
-black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Sesame. Sesmum indicum			
-seeds, mech extd grnd, (5)	5-04-220	92.7	15
Silkworm.			
-pupae, dehy grnd, (5)	5-20-421	90.0	nu
Shrimp			
-process residue, dehy grnd, (5)	5-13-541	90.0	nu
Sorghum. Sorghum vulgare			
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	nu
Sorghum, feterita. Sorghum, vulgare			
-grain, (4)	4-04-369	88.6	20
Sorghum, grain variety. Sorghum vulgare			
-aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	nu
-grain, (4)	4-04-383	88.5	20
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	10
Sorghum, hegari. Sorghum, vulgare			
-grain, (4)	4-04-398	89.0	20
Sorghum, Johnsongrass. Sorghum halepense			
-hay, s-c, (1)	1-04-407	90.5	nu
Sorghum, kafir. Sorghum vulgare, caffrorum			
-grain, (4)	4-04-428	89.2	20

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis) Mature horses
		%	%
Sorghum, kaoliang. Sorghum, vulgare nervosum			
-grain, (4)	4-04-431	88.7	20
Sorghum, milo. Sorghum vulgare, subglabrescens			
-grain. (4)	4-04-444	89.0	25
Sorghum, sorgo. Sorghum vulgare, saccharatum			
-aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	nu
Soybean. Glycine max			
-hay, s-c, (1)	1-04-558	88.9	nu
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0	20
-straw, (1)	1-04-567	87.7	nu
-aerial part, ensiled, (3)	3-04-581	27.2	nu
-seeds, (5)	5-04-610	90.6	nu
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	15
Spleens. see Cattle			
Squirreltail. Sitanion spp			
-aerial part, fresh, stem cured, (2)	2-05-566	80.0*	25
Sugarcane. Saccharum officinarum			
-molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5	10

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	10
Sunflower. Helianthus spp			
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0	10
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8	15
Sweetclover, yellow. Melilotus officinalis			
-yellow, seed screenings, (5)	5-08-007	87.3	nu
Swine. Sus scrofa			
-lard, (4) Lard	4-04-790	100.0*	nu
Timothy. Phleum Pratense			
-hay, s-c, late vegetative, (1)	1-04-881	87.0	100
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	100
-aerial part, ensiled, (3)	3-04-922	33.5	nu
Tomato. Lycopersicon esculentum			
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	10
-pulp, wet, (5)	5-05-042	25.0	10
Turnip. Brassica rapa			
-roots, fresh, (4)	4-05-067	9.6	20
Vetch. Vicia spp			
-hay, s-c, (1)	1-05-106	88.2	nu

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Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
Walnuts. Juglans spp			
-meats w shells, grnd, (4)	4-20-129	93.2	10
Watergrass. Hydrochloa caroliniensis			
-seeds, (4)	4-20-128	90.0	10
Wheat. Triticum spp			
-hay, s-c, (1)	1-05-172	89.7	50
-straw, (1)	1-05-175	90.9	10
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	100
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	20
-grain, (4)	4-05-211	88.5	20
-grain screenings, (4)	4-05-216	88.9	10
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	10
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*	2
Wheatgrass. Agropyron spp			
-aerial part, fresh, mature, (2)	2-05-363	60.5	100
Wheatgrass, crested. Agropyron cristatum			
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	100
Whey. see Cattle			

Table 16. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to horses	International reference number	Dry matter	Amount of feed (dry basis)
			Mature horses
		%	%
Yeast, active. Saccharomyces cerevisiae -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	5
Yeast, brewers Saccharomyces. Saccharomyces cerevisiae -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	5
Yeast, primary Saccharomyces. Saccharomyces cerevisiae -primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9	5

*Dry matter was estimated

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Table 17. Dry matter intake of sheep[a]

Body weight	Gain or loss	Feed per animal	Feed %live weight
kg	g	kg	
Ewes			
Nonlactating and first 15 weeks of gestation			
45	32	1.1	2.4
54	32	1.3	2.4
64	32	1.4	3.2
73	32	1.5	2.1
Last 6 weeks gestation			
45	168	1.5	3.3
54	168	1.7	3.2
64	168	1.9	3.0
73	168	2.0	2.7
First 8 to 10 weeks lactation			
45	-36	1.9	4.2
54	-36	2.1	3.9
64	-36	2.3	3.6
73	-36	2.3	4.9
Last 12 to 14 weeks lactation			
45	32	1.5	3.3
54	32	1.7	3.1
64	32	1.9	3.0
73	32	2.0	2.7
Lambs			
Finishing			
27	159	1.1	4.1
32	181	1.3	4.1
36	204	1.4	3.9
41	204	1.5	3.7
45	181	1.6	3.6

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[a] Adapted from National Research Council Nutrient Requirements of Sheep. 1968. Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

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Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Amount of feed (dry basis) Finishing lambs
Alfalfa. Medicago sativa		%	%	%
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	100	60
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5	100	60
-hay, s-c, early bloom, (1)	1-00-059	90.1	100	50
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	100	60
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	100	50
-aerial part, ensiled, (3)	3-00-212	27.3	100	50
-seed screenings, (5)	5-08-326	90.3	30	30
Almond. Prunus amygdalus -hulls, (4)	4-00-359	88.4	50	50
Animal -blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	nu	5
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	5	5
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6	nu	nu

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	5	5
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	nu	nu
Apples. Malus spp				
-fruit, fresh, (4)	4-00-421	15.9	10	10
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	50	50
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	50	50
Apricots. Prunus armeniaca				
-fruit, fresh, (4)	4-20-438	14.6	10	10
-fruit wo pits, dehy, (4)	4-15-311	90.0	30	30
Artichoke. Cynera scolymus				
-roots, fresh, (4)	4-00-430	20.5	10	10
Asparagus. Asparagus officinalis				
-stem butts, fresh, (2)	2-00-436	91.0	20	20
Avocado. Persea americana				
-fruit wo pits, grnd, (4)	4-15-312	91.4	20	20
Babassu. Orbignya spp				
-kernels, extn unspecified grnd, (5)	5-00-453	92.7	10	15

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Bakery				
-refuse, dehy, (4)	4-20-419	90.0	30	30
Banana. *Musa spp*				
-fruit, fresh, (4)	4-00-485	24.3	10	10
-peelings, dehy, grnd, (4)	4-00-486	88.0	10	10
Barley. *Hordeum vulgare*				
-hay, s-c, (1)	1-00-495	88.5	80	50
-straw, (1)	1-00-498	91.7	50	10
-grain screenings, (4)	4-00-542	88.9	50	50
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	40	60
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3	20	20
Bean. *Phaseolus spp*				
-straw, (1)	1-00-585	88.4	10	nu
-cannery residue, fresh (2)	2-00-587	9.4	25	10
Bean, kidney. *Phaseolus vulgaris*				
-kidney, seeds, (5)	5-00-600	88.9	20	20
Bean, lima. *Phaseolus limensis*				
-seeds, (4) Butter bean	4-15-317	90.0	20	20
Bean, mung. *Phaseolus aureus*				
-seeds, (5)	5-08-185	90.0	20	20
Bean, navy. *Phasiolus vulgaris*				
-seeds, (5)	5-00-623	89.7	20	20
Beet, mangels. *Beta spp*				
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	30	20

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Beet, common. *Beta vulgaris*				
-leaves, dehy, (1)	1-20-418	90.0	30	30
Beet, sugar. *Beta saccharifera*				
-straw, (1)	1-00-644	81.6	10	5
-hulls, (1)	1-00-643	85.3	10	5
-sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	100	50
-crowns, fresh, (4)	4-00-648	18.0	10	10
-root tips (4)	4-20-436	19.2*	10	10
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1	10	10
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	50	40
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	50	40
Bermudagrass. *Cynodon dactylon*				
-hay, s-c, (1)	1-00-703	90.9	60	40
-aerial part, fresh, (2)	2-00-712	28.9	100	50
Bermudagrass, coastal. *Cynodon dactylon*				
-coastal, hay, s-c, (1)	1-00-716	91.0	60	40
Blood. see Animal				
Bluegrass, Kentucky. *Poa pratensis*				
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	100	50

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Finishing lambs
		%	%	%
Bluestem. *Andropogon spp*				
-aerial part, fresh, early vegetative, (2)	2-00-821	26.8	100	50
Bread, white.				
-enriched, (4)	4-08-359	64.1	30	30
Broccoli. *Brassica oleracea botrytis*				
-aerial part, dehy, (4)	4-20-417	90.0	10	10
stems, fresh, (4)	4-00-884	45.1	10	10
Brome, cheatgrass. *Bromus tectorum*				
-cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	100	50
Brome, smooth. *Bromus inermis*				
-smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	100	50
Brussel, sprouts. *Brassica oleracea gemmifera*				
-heads fresh, (4)	4-08-187	14.8	10	10
Buckwheat. *Fagopyrum spp*				
-grain, (4)	4-00-994	87.8	20	20
-flour by-product wo hulls, coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7	20	20
Buffalograss. *Buchloe dactyloides*				
-aerial part, fresh, (2)	2-01-010	45.8	100	50
Burclover. *Medicago, lispida*				
-seeds, (4)	4-20-113	93.4	30	25
Buttermilk. see Cattle				

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Cabbage. *Brassica oleracea, capitata*				
-aerial part, fresh, (4)	4-01-046	9.4	10	10
-aerial part, dehy, (4)	4-15-314	88.3	10	10
-cannery residue, (4)	4-15-313	15.8	10	10
Carob bean. *Ceratonia siliqua*				
-seeds, (5)	5-09-306	81.2	20	20
Carrot. *Daucus spp*				
-leaves, fresh, (4)	4-01-143	16.5	15	10
-pulp, wet grnd, (4)	4-15-315	14.0	30	30
-roots, dehy, (4)	4-20-148	90.0	30	30
-roots, fresh, (4)	4-01-145	11.9	20	20
Casein. see Cattle				
Cassava. *Manihot spp*				
-starch by-product, dehy, (4)	4-08-572	90.0	30	30
Castorbean. *Ricinus communis*				
-seeds, extn unspecified grnd, (5) Castor bean meal	5-20-420	90.0	10	10
Cattle, *Bos spp*				
-whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	10	10

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Amount of feed (dry basis) Finishing lambs
		%	%	%
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	10	10
-casein, milk acid precipitated dehy. mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	10	15
-cheese rind, (5)	5-01-163	82.8	10	10
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	10	15
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	10	15
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	5	5

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Amount of feed (dry basis) Finishing lambs
		%	%	%
-cottage, cheese, (5)	5-08-001	21.0	nu	nu
-manure, dehy grnd, (7)	7-01-190	93.5	20	nu
Cauliflower. Brassica aleracea botrytis				
-heads, fresh, (4)	4-08-189	9.0	20	20
Celery. Apium graveolens				
-aerial part, fresh, (4)	4-01-195	5.9	20	20
-stalks, fresh, (4)	4-01-197	6.3	20	20
-stalks, dehy, (4)	4-15-316	90.0	20	20
Chicken. Gallus domesticus				
-gizzards, raw, (5)	5-07-948	25.0	nu	nu
-manure, dehy, (5)	5-20-423	90.0	20	20
Chicken, broiler. Gallus, domesticus				
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	15	15
-manure w shavings added, dehy, (5)	5-20-425	91.0*	15	15
Citrus. Citrus spp				
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	30	25
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9	nu	nu
Citrus, grapefruit. Citrus paradisi				
-fruit, fresh, (4)	4-01-242	13.6	20	20
-pulp, shredded, wet, (4)	4-01-243	14	20	20

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Citrus, lemon. *Citrus limon*				
-pulp, (4)	4-11-753	92.8	20	20
Citrus, orange. *Citrus sinensis*				
-pulp, ensiled, (3)	3-01-250	11.3	20	20
-fruit, fresh, cull, (4)	4-01-252	12.8	20	20
-cannery residue, dehy, (4)	4-15-318	90.6	30	25
-pulp, shredded wet, (4)	4-01-253	14.4	20	20
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	20	20
Clover, alsike. *Trifolium hybridum*				
-alsike, hay, s-c, (1)	1-01-313	87.7	100	50
-alsike, aerial part, fresh, (2)	2-01-316	22.4	30	30
Clover, crimson. *Trifolium incarnatum*				
-crimson, hay, s-c, (1)	1-01-328	88.9	100	50
-crimson, aerial part, fresh, (2)	2-01-336	17.6	30	30
Clover, ladino. *Trifolium repens*				
-ladino, hay, s-c, (1)	1-01-378	89.5	100	50
-ladino, aerial part, fresh, (2)	2-01-383	17.7	30	30
Clover, red. *Trifolium pratense*				
-red, hay, s-c, (1)	1-01-415	79.5	100	50
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	30	30
-red, seeds, (5)	5-08-004	87.9	nu	nu
-red, seed screenings, (5)	5-08-005	90.3	nu	nu

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Coconut. Cocos nucifera				
-meats, mech extd grnd, (5)	5-01-572	92.8	10	10
Coconut meal, mechanical extracted (AAFCO)				
Copra meal, mechanical extracted (AAFCO)				
Coffee. Coffea spp				
-hulls, (1)	1-11-479	90.0	10	10
Corn. Zea mays				
-aerial part, s-c, mature, (1)	1-02-772	68.1	60	nu
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	60	nu
-cobs, grnd, (1)	1-02-782	89.8	30	20
Ground corn cob (AAFCO)				
-aerial part, ensiled, (3)	3-02-822	23.7	90	50
Corn fodder silage				
-ears w husks, ensiled, (3)	3-02-839	43.4*	50	50
-ears, grnd, (4)	4-02-849	85.1	50	75
Corn and cob meal (AAFCO)				
Ear corn chop (AAFCO)				
Ground ear corn (AAFCO)				
-grits by-product, mn 5% fat, (4)	4-02-887	89.8	50	50
Hominy feed (CFA)				
Hominy feed (AAFCO)				
-distillers grains, dehy, (5)	5-02-842	93.1	10	20
Corn distillers dried grains (CFA)				
Corn distillers dried grains (AAFCO)				

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	10	10
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	10	20
Corn, dent yellow. Zea mays, indentata				
-dent yellow, grain, (4)	4-02-935	87.0	40	60
Cottage cheese. see Cattle				
Cotton. Gossypium spp				
-bolls, s-c, (1)	1-01-596	91.8	nu	nu
-gin by-product, (1)	1-08-413	90.3	10	5
-hulls, (1) cottonseed hulls (AAFCO)	1-01-599	90.8	30	20
-hulls wo lint, (1)	1-01-600	90.9	10	5
-seeds, grnd, (5)	5-01-608	92.7	20	20
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	20	20
Cowpea. Vigna Spp				
-hay, s-c, (1)	1-01-645	90.4	80	50
-seeds, (5) Blackeye bean	5-01-661	89.0	20	20

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Finishing lambs
		%	%	%
Crab. *Callinectes sapidus, Cancer spp* *Paralithodes camschatica*				
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	nu	nu
Dates. *Phoenix dactylifera* -fruit, dehy, (4)	4-01-752	91.9	20	20
Deervetch, birdsfoot. *Lotus corniculatus* -birdsfoot, hay, s-c, (1)	1-05-044	89.7	100	50
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	100	50
Distillers grains. see Corn; see Grains; see Rye				
Distillers solubles. see Corn				
Digester tankage. see Animal				
Emmer. *Triticum dicoccum* -grain, (4)	4-01-830	90.8	30	20
Fenugreek. *Trigonella foenumgraecum* -seeds, (8)	8-01-856	90.7	5	5
Fescue, alta. *Festuca arundinacea* -alta, aerial part, fresh, (2)	2-01-889	23.9	75	30
Fescue, meadow. *Festuca elatior* -meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	75	30
-meadow, aerial part, fresh, (2)	2-01-920	28.6	75	30

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List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Amount of feed (dry basis) Finishing lambs
		%	%	%
Fig, common. Ficus carica				
-fruit, dehy, (4)	4-01-955	76.0	20	20
Fish				
-stickwater solubles, cooked dehy, mn 60% protein, (5)	5-01-971	92.3	nu	nu
Dried fish solubles (AAFCO)				
oil, (7)	7-01-965	100.0*	nu	nu
Blended fish oil (CFA)				
Fish oil (AAFCO)				
Fish, anchovy. Engraulis spp				
-anchovy, whole or cuttings, cooked mech extd dehy grnd, (5)	5-01-985	92.0	nu	nu
Fish meal, anchovy				
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family)				
-white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5)	5-02-025	91.0	nu	nu
White fish meal (CFA)				
Fish, cod, meal				
Fish, cusk, meal				
Fish, haddock, meal				
Fish, hake, meal				
Fish, pollock, meal				
Fish, monkfish, meal				
Fish, skate, meal				
Flax, common. Linum usitatissimum				
-fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	10	5
-hulls, (1)	1-02-037	92.0	15	15

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Finishing lambs
		%	%	%
-common, seed screenings, (4)	4-02-056	91.4	nu	nu
-common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	10	15
-seeds, (5)	5-02-052	90.8	15	15
Fly. Mesca domestica				
-pupae, dehy grnd, (5)	5-20-422	90.0	nu	nu
Gamagrass, eastern. Tripsacum dactyloides				
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	100	50
Gamagrass, Florida. Tripsacum floridanum				
-Florida, hay, s-c, (1)	1-02-087	92.3	100	50
Garbage.				
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	50	50
Grains.				
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0	30	40
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1	30	20
-distillers grains, dehy, (5)	5-02-144	92.6	10	20

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Grama. Bouteloua spp				
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	100	50
-aerial part, fresh, mature, (2)	2-02-166	63.4	100	25
Grapes. Vitis spp				
-fruit, dehy, (4)	4-02-203	84.8	30	30
-fruit, dehy, cull, (4)	4-08-427	84.8	30	30
-fruit, fresh, (4)	4-02-204	18.1	30	30
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	30	30
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5	30	30
-raisin syrup by-product, (4)	4-08-428	89.4	30	30
-seeds, (4)	4-20-133	85.0	10	10
-seeds, dehy grnd, (4)	4-08-082	90.0	10	10
Guar. Cyamopsis tetragonoloba				
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	10	10
Hemp. Cannabis sativa				
-seeds, (5)	5-20-136	91.1	5	5
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	5	5
Hominy feed. see Corn grits by-product				
Hops. Humulus spp				
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1	5	5
Ipilipil. Leucaena leuocephala				
-leaves, dehy grnd, (4)	4-20-446	91.0	nu	nu

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List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	
Kale. Brassica oleracea acephala -aerial part, fresh (2)	2-02-446	11.6	30	30
Lespedeza. Lespedeza spp -hay, s-c, midbloom, (1)	1-02-511	94.1	100	50
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	100	50
Lettuce. Lactuca sativa -aerial part, dehy grnd, (4)	4-15-319	90.0	30	30
-aerial part, fresh, (2)	2-02-624	5.3	30	30
-refuse, dehy, (4)	4-15-320	90.0	30	30
Livers. see Animal; see Cattle				
Lobster. Homarus americanus -process residue, dehy grnd, (5)	5-02-635	90.0	nu	nu
Locust -seeds, (5)	5-20-429	90.8	30	30
Manure. see Cattle				
Meat meal. see Animal				
Meat meal tankage. see Animal				
Melons, pie. Curcurbita spp -fruit w seeds, fresh, (4)	4-08-459	4.1	20	20
Mesquite. Prosopis spp -seeds w pods, s-c, (1)	1-15-321	91.5	20	20
Milk. see Cattle				
Millet. Setaria spp -grain, (4)	4-03-098	89.9	30	40

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Molasses. see Beet; see Sugarcane; see Citrus				
Mustard. Brassica spp				
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	10	10
Napiergrass. Pennisetum purpureum				
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	100	50
Nectarine. Prunus persica nectarina				
-fruit, fresh, (4)	4-20-430	15.8*	20	20
Oak. Querus spp				
-acorns, (4)	4-07-755	70.7	20	20
Oats. Avena sativa				
-hay, s-c, (1)	1-03-280	90.5	100	50
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	10	10
-straw, (1)	1-03-283	92.1	50	10
-aerial part, ensiled, (3)	3-03-298	31.0	100	25
-grain, (4)	4-03-309	89.7	40	60
Oats, wild. Avena fatua				
-wild, grain, (4)	4-03-394	91.0	10	5
Olives. Olea europaea				
-cannery residue, (4)	4-15-323	91.7	30	30
-pulp, dehy, (4)	4-15-322	93.5	30	30
Onion. Allium spp				
-refuse, dehy, (1)	1-15-325	89.4	20	20

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
-seed screenings, (4)	4-15-324	89.1	20	20
Orchardgrass. Dactylis glomerata				
-hay, s-c, (1)	1-03-438	88.7	100	50
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	100	50
Palm. Elaeis spp				
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	20	20
Parsnip. Pastinaca sativa				
-roots, fresh, (4)	4-03-536	13.7	30	20
Pea. Pisum spp				
-split pea by-product, grnd, (1)	1-08-478	89.5	30	30
-straw, (1)	1-03-577	84.7	nu	nu
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	80	40
-seeds, dehy, (5)	5-20-135	90.5	20	20
-seeds, grnd, (5)	5-03-598	89.1	20	20
Peaches, Prunus persica				
-fruit, fresh, (4)	4-20-432	13.1	10	10
-fruit wo pits, dehy, (4)	4-13-452	90.0	30	30
Peanut. Arachis hypogaea				
-hulls, grnd, (1)	1-03-629	94.4	nu	nu
-hay, s-c, (1)	1-03-619	91.6	25	25
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	10	10

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
-kernels w skins w hulls, (5)	5-03-653	93.4	nu	nu
Pears. *Pyrus spp*				
-fruit, fresh, (4)	4-03-660	17.3	30	30
Pecan. *Carya illinoinsis*				
-shells, grnd, (1)	1-20-428	86.0*	5	5
Pineapple. *Ananas comosus*				
-cannery residue, dehy, (4)	4-03-722	88.6	40	40
Pineapple bran				
Plums. *Prunus domestica*				
-fruits, fresh, (4)	4-20-433	14.3	10	10
Potato. *Solanum tuberosum*				
-process residue, dehy, (4)	4-03-775	88.4	20	20
Potato by-product, dried				
Potato pomace, dried				
Potato pulp, dried				
Potato waste, dried				
-roots, baked dehy, (4)	4-20-153	86.4	40	40
-roots, cooked, (4)	4-03-784	24.3	25	25
-roots, dehy grnd, (4)	4-07-850	91.1	40	40
Potato meal				
-roots, fresh, (4)	4-03-787	22.8	30	30
Poultry				
-feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5)	5-03-795	92.7	nu	nu
Hydrolyzed poultry feathers (AAFCO)				
Feather meal				
-viscera w feet w heads, dry or wet rendered dehy grnd, (5)	5-03-799	93.0	nu	nu
Poultry by-product meal (CFA)				

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Finishing lambs
		%	%	%
Pricklypear. Opuntia spp				
-aerial part, fresh, (2)	2-01-061	16.8	10	10
Prunes. Prunus domestica				
-fruit, fresh, (4)	4-20-359	14.3	10	10
-fruit, dehy grnd, (4)	4-20-435	90.0	30	30
-fruit wo pits, dehy, (4)	4-20-434	90.0	30	30
Pumpkins. Cucurbita pepo				
-fruit, fresh, (4)	4-03-815	9.1	20	20
Ramie. Boehmeria nivea				
-leaves, dehy grnd, (1)	1-03-857	90.0	10	10
Rape. Brassica spp				
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	10	15
Rice. Oryza sativa				
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8	10	15
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	5	5
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	10	15

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List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
-polishings, dehy, (4)	4-03-943	90.2	10	15
Rice polish (CFA)				
Rice polishings (AAFCO)				
Rubbertree, para. Hevea, brasiliensis				
-seeds, extn unspecified caked, (5)	5-20-147	86.0*	nu	nu
Rutabagas. Brassica napobrassica				
-roots, fresh, (4)	4-04-001	11.4	50	30
Rye. Secale cereale				
-straw, (1)	1-04-007	91.0	50	10
-flour by-product, coarse sifted, mx 8.5% fiber, (4)	4-04-031	89.2	20	20
Rye middlings (AAFCO)				
-grain, (4)	4-04-047	88.8	40	60
-distillers grains, dehy, (5)	5-04-023	93.0	10	10
Rye distillers dried grains (CFA)				
Rye distillers dried grains (AAFCO)				
Ryegrass, Italian. Lolium multiflorum				
-Italian, aerial part, fresh, (2)	2-04-073	21.4	100	50
Safflower. Carthamus tinctorius				
-seeds, (4)	4-07-958	92.7	nu	nu
-seeds, mech extd grnd, (5)	5-04-109	91.7	10	15
Safflower seed, mechanical extracted (AAFCO)				
Sage, black. Salvia mellifera				
-black, browse, fresh, stem cured, (2)	2-05-564	52.0*	90	nu

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List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Sesame. Sesmum indicum				
-seeds, mech extd grnd, (5)	5-04-220	92.7	10	15
Silkworm.				
-pupae, dehy grnd, (5)	5-20-421	90.0	nu	nu
Shrimp				
-process residue, dehy grnd, (5)	5-13-541	90.0	nu	nu
Sorghum. Sorghum vulgare				
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	95	40
Sorghum, feterita. Sorghum, vulgare				
-grain, (4)	4-04-369	88.6	30	60
Sorghum, grain variety. Sorghum vulgare				
-aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	90	25
-grain, (4)	4-04-383	88.5	30	60
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	10	20
Sorghum, hegari. Sorghum, vulgare				
-grain, (4)	4-04-398	89.0	30	60
Sorghum, Johnsongrass. Sorghum halepense				
-hay, s-c, (1)	1-04-407	90.5	100	40
Sorghum, kafir. Sorghum vulgare, caffrorum				
-grain, (4)	4-04-428	89.2	30	60

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List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Sorghum, kaoliang. Sorghum, vulgare nervosum				
-grain, (4)	4-04-431	88.7	20	60
Sorghum, milo. Sorghum vulgare, subglabrescens				
-grain. (4)	4-04-444	89.0	30	60
Sorghum, sorgo. Sorghum vulgare, saccharatum				
-aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	95	40
Soybean. Glycine max				
-hay, s-c, (1)	1-04-558	88.9	90	40
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0	20	30
-straw, (1)	1-04-567	87.7	60	10
-aerial part, ensiled, (3)	3-04-581	27.2	80	10
-seeds, (5)	5-04-610	90.6	10	15
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	10	15
Spleens. see Cattle				
Squirreltail. Sitanion spp				
-aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu
Sugarcane. Saccharum officinarum				
-molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5	10	10

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	10	10
Sunflower. Helianthus spp				
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0	10	15
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8	10	15
Sweetclover, yellow. Melilotus officinalis				
-yellow, seed screenings, (5)	5-08-007	87.3	nu	nu
Swine. Sus scrofa				
-lard, (4) Lard	4-04-790	100.0*	3	3
Timothy. Phleum Pratense				
-hay, s-c, late vegetative, (1)	1-04-881	87.0	100	50
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	100	50
-aerial part, ensiled, (3)	3-04-922	33.5	75	40
Tomato. Lycopersicon esculentum				
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	20	20
-pulp, wet, (5)	5-05-042	25.0	15	15
Turnip. Brassica rapa				
-roots, fresh, (4)	4-05-067	9.6	25	20
Vetch. Vicia spp				
-hay, s-c, (1)	1-05-106	88.2	nu	nu

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis) Ewes and rams	Finishing lambs
		%	%	%
Walnuts. *Juglans spp*				
-meats w shells, grnd, (4)	4-20-129	93.2	20	20
Watergrass. *Hydrochloa caroliniensis*				
-seeds, (4)	4-20-128	90.0	20	20
Wheat. *Triticum spp*				
-hay, s-c, (1)	1-05-172	89.7	100	50
-straw, (1)	1-05-175	90.9	60	10
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	100	100
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	20	20
-grain, (4)	4-05-211	88.5	30	50
-grain screenings, (4)	4-05-216	88.9	20	40
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	5	5
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*	nu	nu
Wheatgrass. *Agropyron spp*				
-aerial part, fresh, mature, (2)	2-05-363	60.5	100	20
Wheatgrass, crested. *Agropyron cristatum*				
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	100	50
Whey. see Cattle				

Table 18. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to sheep	International reference number	Dry matter	Amount of feed (dry basis)	
			Ewes and rams	Finishing lambs
		%	%	%
Yeast, active. Saccharomyces cerevisiae -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	nu	nu
Yeast, brewers Saccharomyces. Saccharomyces cerevisiae -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	nu	nu
Yeast, primary Saccharomyces. Saccharomyces cerevisiae -primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9	nu	nu

*Dry matter was estimated

Table 19. Daily dry matter intake of breeding swine[a]

	Liveweight					
	Bred gilts	Bred sows	Lactating gilts	Lactating sows	Young boars	Adult boars
	kg	kg	kg	kg	kg	kg
	110-160	160-250	140-200	200-250	110-180	180-250
Total daily feed (dry basis), g	1800	1800	4500	4950	2250	1800

[a] Adapted from National Research Council. Nutrient requirements of swine. 1973. Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

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Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Finishing animals
		%	%	%
Alfalfa. Medicago sativa				
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	50	2.5
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5	50	2.5
-hay, s-c, early bloom, (1)	1-00-059	90.1	nu	nu
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	50	5
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	nu	nu
-aerial part, ensiled, (3)	3-00-212	27.3	25	nu
-seed screenings, (5)	5-08-326	90.3	10	10
Almond. Prunus amygdalus				
-hulls, (4)	4-00-359	88.4	10	10
Animal				
-blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	5	5
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	10	5
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6	10	5

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	10	5
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	5	5
Apples. Malus spp				
-fruit, fresh, (4)	4-00-421	15.9	10	10
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	nu	nu
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	30	30
Apricots. Prunus armeniaca				
-fruit, fresh, (4)	4-20-438	14.6	30	30
-fruit wo pits, dehy, (4)	4-15-311	90.0	30	30
Artichoke. Cynera scolymus				
-roots, fresh, (4)	4-00-430	20.5	10	10
Asparagus. Asparagus officinalis				
-stem butts, fresh, (2)	2-00-436	91.0	20	20
Avocado. Persea americana				
-fruit wo pits, grnd, (4)	4-15-312	91.4	20	20
Babassu. Orbignya spp				
-kernels, extn unspecified grnd, (5)	5-00-453	92.7	20	20

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Bakery				
-refuse, dehy, (4)	4-20-419	90.0	30	30
Banana. Musa spp				
-fruit, fresh, (4)	4-00-485	24.3	20	20
-peelings, dehy, grnd, (4)	4-00-486	88.0	5	5
Barley. Hordeum vulgare				
-hay, s-c, (1)	1-00-495	88.5	nu	nu
-straw, (1)	1-00-498	91.7	nu	nu
-grain screenings, (4)	4-00-542	88.9	nu	nu
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	80	40
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3	nu	nu
Bean. Phaseolus spp				
-straw, (1)	1-00-585	88.4	nu	nu
-cannery residue, fresh (2)	2-00-587	9.4	10	10
Bean, kidney. Phaseolus vulgaris				
-kidney, seeds, (5)	5-00-600	88.9	10	10
Bean, lima. Phaseolus limensis				
-seeds, (4) Butter bean	4-15-317	90.0	25	20
Bean, mung. Phaseolus aureus				
-seeds, (5)	5-08-185	90.0	20	20
Bean, navy. Phasiolus vulgaris				
-seeds, (5)	5-00-623	89.7	nu	nu
Beet, mangels. Beta spp				
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Beet, common. Beta vulgaris				
-leaves, dehy, (1)	1-20-418	90.0	5	5
Beet, sugar. Beta saccharifera				
-straw, (1)	1-00-644	81.6	nu	nu
-hulls, (1)	1-00-643	85.3	nu	nu
-sugar, aerial part w crowns,fresh, (2)	2-00-649	17.0	nu	nu
-crowns,fresh, (4)	4-00-648	18.0	10	5
-root tips (4)	4-20-436	19.2*	nu	nu
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1	5	5
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	15	5
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	15	5
Bermudagrass. Cynodon dactylon				
-hay, s-c, (1)	1-00-703	90.9	nu	nu
-aerial part, fresh, (2)	2-00-712	28.9	nu	nu
Bermudagrass, coastal. Cynodon dactylon				
-coastal, hay, s-c, (1)	1-00-716	91.0	nu	nu
Blood. see Animal				
Bluegrass, Kentucky. Poa pratensis				
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Finishing animals
		%	%	%
Bluestem. Andropogon spp				
-aerial part, fresh, early vegetative, (2)	2-00-821	26.8	nu	nu
Bread, white.				
-enriched, (4)	4-08-359	64.1	30	30
Broccoli. Brassica oleracea botrytis				
-aerial part, dehy, (4)	4-20-417	90.0	5	5
stems, fresh, (4)	4-00-884	45.1	5	5
Brome, cheatgrass. Bromus tectorum				
-cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	nu	nu
Brome, smooth. Bromus inermis				
-smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	nu	nu
Brussel, sprouts. Brassica oleracea gemmifera				
-heads fresh, (4)	4-08-187	14.8	5	5
Buckwheat. Fagopyrum spp				
-grain, (4)	4-00-994	87.8	nu	nu
-flour by-product wo hulls, coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7	nu	nu
Buffalograss. Buchloe dactyloides				
-aerial part, fresh, (2)	2-01-010	45.8	nu	nu
Burclover. Medicago, lispida				
-seeds, (4)	4-20-113	93.4	10	10
Buttermilk. see Cattle				

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Cabbage. *Brassica oleracea, capitata*				
-aerial part, fresh, (2)	2-01-046	9.4	nu	nu
-aerial part, fresh, (4)	4-01-046	9.4	nu	nu
-aerial part, dehy, (4)	4-15-314	88.3	10	10
-cannery residue, (4)	4-15-313	15.8	10	10
Carob bean. *Ceratonia siliqua*				
-seeds, (5)	5-09-306	81.2	40	40
Carrot. *Daucus spp*				
-leaves, fresh, (4)	4-01-143	16.5	nu	nu
-pulp, wet grnd, (4)	4-15-315	14.0	20	20
-roots, dehy, (4)	4-20-148	90.0	20	20
-roots, fresh, (4)	4-01-145	11.9	20	20
Casein. see Cattle				
Cassava. *Manihot spp*				
-starch by-product, dehy, (4)	4-08-572	90.0	30	30
Castorbean. *Ricinus communis*				
-seeds, extn unspecified grnd, (5) Castor bean meal	5-20-420	90.0	10	10
Cattle, *Bos spp*				
-whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Amount of feed (dry basis) Finishing animals
		%	%	%
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	nu	5
-casein, milk acid precipitated dehy. mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	nu	nu
-cheese rind, (5)	5-01-163	82.8	15	15
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	nu	nu
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	nu	nu
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
-cottage, cheese, (5)	5-08-001	21.0	nu	5
-manure, dehy grnd, (7)	7-01-190	93.5	nu	nu
Cauliflower. Brassica aleracea botrytis -heads, fresh, (4)	4-08-189	9.0	10	10
Celery. Apium graveolens -aerial part, fresh, (4)	4-01-195	5.9	10	10
-stalks, fresh, (4)	4-01-197	6.3	10	10
-stalks, dehy, (4)	4-15-316	90.0	10	10
Chicken. Gallus domesticus -gizzards, raw, (5)	5-07-948	25.0	10	10
-manure, dehy, (5)	5-20-423	90.0	10	10
Chicken, broiler. Gallus, domesticus -manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	10	5
-manure w shavings added, dehy, (5)	5-20-425	91.0*	10	5
Citrus. Citrus spp -pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	1	1
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9	nu	nu
Citrus, grapefruit. Citrus paradisi -fruit, fresh, (4)	4-01-242	13.6	20	20
-pulp, shredded, wet, (4)	4-01-243	14	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Finishing animals
		%	%	%
Citrus, lemon. *Citrus limon*				
-pulp, (4)	4-11-753	92.8	10	10
Citrus, orange. *Citrus sinensis*				
-pulp, ensiled, (3)	3-01-250	11.3	10	10
-fruit, fresh, cull, (4)	4-01-252	12.8	20	20
-cannery residue, dehy, (4)	4-15-318	90.6	30	30
-pulp, shredded wet, (4)	4-01-253	14.4	10	10
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	10	10
Clover, alsike. *Trifolium hybridum*				
-alsike, hay, s-c, (1)	1-01-313	87.7	nu	nu
-alsike, aerial part, fresh, (2)	2-01-316	22.4	10	5
Clover, crimson. *Trifolium incarnatum*				
-crimson, hay, s-c, (1)	1-01-328	88.9	nu	nu
-crimson, aerial part, fresh, (2)	2-01-336	17.6	nu	nu
Clover, ladino. Trifolium repens				
-ladino, hay, s-c, (1)	1-01-378	89.5	nu	nu
-ladino, aerial part, fresh, (2)	2-01-383	17.7	10	5
Clover, red. *Trifolium pratense*				
-red, hay, s-c, (1)	1-01-415	79.5	nu	nu
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	nu	nu
-red, seeds, (5)	5-08-004	87.9	nu	nu
-red, seed screenings, (5)	5-08-005	90.3	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Coconut. Cocos nucifera				
-meats, mech extd grnd, (5) Coconut meal, mechanical extracted (AAFCO) Copra meal, mechanical extracted (AAFCO)	5-01-572	92.8	nu	nu
Coffee. Coffea spp				
-hulls, (1)	1-11-479	90.0	10	10
Corn. Zea mays				
-aerial part, s-c, mature, (1)	1-02-772	68.1	nu	nu
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	nu	nu
-cobs, grnd, (1) Ground corn cob (AAFCO)	1-02-782	89.8	nu	nu
-aerial part, ensiled, (3) Corn fodder silage	3-02-822	23.7	nu	nu
-ears w husks, ensiled, (3)	3-02-839	43.4*	80	50
-ears, grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	80	75
-grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	80	85
-distillers grains, dehy, (5) Corn distillers dried grains (CFA) Corn distillers dried grains (AAFCO)	5-02-842	93.1	25	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	10	10
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	25	5
Corn, dent yellow. Zea mays, indentata				
-dent yellow, grain, (4)	4-02-935	87.0	80	85
Cottage cheese. see Cattle				
Cotton. Gossypium spp				
-bolls, s-c, (1)	1-01-596	91.8	nu	nu
-gin by-product, (1)	1-08-413	90.5	nu	nu
-hulls, (1) cottonseed hulls (AAFCO)	1-01-599	90.8	nu	nu
-hulls wo lint, (1)	1-01-600	90.9	nu	nu
-seeds, grnd, (5)	5-01-608	92.7	10	10
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	5	5
Cowpea. Vigna Spp				
-hay, s-c, (1)	1-01-645	90.4	5	5
-seeds, (5) Blackeye bean	5-01-661	89.0	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	 Finishing animals
		%	%	%
Crab. Callinectes sapidus, Cancer spp Paralithodes camschatica				
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	nu	nu
Dates. Phoenix dactylifera				
-fruit, dehy, (4)	4-01-752	91.9	10	10
Deervetch, birdsfoot. Lotus corniculatus				
-birdsfoot, hay, s-c, (1)	1-05-044	89.7	nu	nu
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	nu	nu
Distillers grains. see Corn; see Grains; see Rye				
Distillers solubles. see Corn				
Digester tankage. see Animal				
Emmer. Triticum dicoccum				
-grain, (4)	4-01-830	90.8	nu	nu
Fenugreek. Trigonella foenumgraecum				
-seeds, (8)	8-01-856	90.7	10	10
Fescue, alta. Festuca arundinacea				
-alta, aerial part, fresh, (2)	2-01-889	23.9	nu	nu
Fescue, meadow. Festuca elatior				
-meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	nu	nu
-meadow, aerial part, fresh, (2)	2-01-920	28.6	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Finishing animals
		%	%	%
Fig, common. *Ficus carica*				
-fruit, dehy, (4)	4-01-955	76.0	20	20
Fish				
-stickwater solubles, cooked dehy, mn 60%				
protein, (5)	5-01-971	92.3	1.25	1.25
Dried fish solubles (AAFCO)				
oil, (7)				
Blended fish oil (CFA)	7-01-965	100.0*	nu	nu
Fish oil (AAFCO)				
Fish, anchovy. *Engraulis spp*				
-anchovy, whole or cuttings, cooked mech				
extd dehy grnd, (5)	5-01-985	92.0	5	5
Fish meal, anchovy				
Fish, white. *Gadidae* (family) *Lophiidae* (family) *Rajidae* (family)				
-white, whole or cuttings, cooked mech				
extd dehy grnd, mx 4% oil, (5)	5-02-025	91.0	5	5
White fish meal (CFA)				
Fish, cod, meal				
Fish, cusk, meal				
Fish, haddock, meal				
Fish, hake, meal				
Fish, pollock, meal				
Fish, monkfish, meal				
Fish, skate, meal				
Flax, common. *Linum usitatissimum*				
-fiber by-product, mn 9% protein				
mx 35% fiber, (1)	1-02-036	91.6	nu	nu
-hulls, (1)	1-02-037	92.0	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
-common, seed screenings, (4)	4-02-056	91.4	15	15
-common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	5	5
-seeds, (5)	5-02-052	90.8	20	20
Fly. *Mesca domestica*				
-pupae, dehy grnd, (5)	5-20-422	90.0	10	10
Gamagrass, eastern. *Tripsacum dactyloides*				
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	nu	nu
Gamagrass, Florida. *Tripsacum floridanum*				
-Florida, hay, s-c, (1)	1-02-087	92.3	nu	nu
Garbage.				
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	80	80
Grains.				
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0	15	15
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1	nu	nu
-distillers grains, dehy, (5)	5-02-144	92.6	15	5

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Grama. Bouteloua spp				
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	nu	nu
-aerial part, fresh, mature, (2)	2-02-166	63.4	nu	nu
Grapes. Vitis spp				
-fruit, dehy, (4)	4-02-203	84.8	20	20
-fruit, dehy, cull, (4)	4-08-427	84.8	20	20
-fruit, fresh, (4)	4-02-204	18.1	20	20
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	20	20
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5	10	10
-raisin syrup by-product, (4)	4-08-428	89.4	20	20
-seeds, (4)	4-20-133	85.0	10	10
-seeds, dehy grnd, (4)	4-08-082	90.0	20	20
Guar. Cyamopsis tetragonoloba				
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	10	10
Hemp. Cannabis sativa				
-seeds, (5)	5-20-136	91.1	5	5
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	5	5
Hominy feed. see Corn grits by-product				
Hops. Humulus spp				
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1	nu	nu
Ipilipil. Leucaena leucocephala				
-leaves, dehy grnd, (4)	4-20-446	91.0	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Kale. Brassica oleracea acephala				
-aerial part, fresh (2)	2-02-446	11.6	10	10
Lespedeza. Lespedeza spp				
-hay, s-c, midbloom, (1)	1-02-511	94.1	nu	nu
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	nu	nu
Lettuce. Lactuca sativa				
-aerial part, dehy grnd, (4)	4-15-319	90.0	20	20
-aerial part, fresh, (2)	2-02-624	5.3	20	20
-refuse, dehy, (4)	4-15-320	90.0	20	20
Livers. see Animal; see Cattle				
Lobster. Homarus americanus				
-process residue, dehy grnd, (5)	5-02-635	90.0	4	4
Locust				
-seeds, (5)	5-20-429	90.8	20	20
Manure. see Cattle				
Meat meal. see Animal				
Meat meal tankage. see Animal				
Melons, pie. Curcurbita spp				
-fruit w seeds, fresh, (4)	4-08-459	4.1	20	20
Mesquite. Prosopis spp				
-seeds w pods, s-c, (1)	1-15-321	91.5	10	10
Milk. see Cattle				
Millet. Setaria spp				
-grain, (4)	4-03-098	89.9	50	25

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Molasses. see Beet; see Sugarcane; see Citrus				
Mustard. Brassica spp				
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	10	10
Napiergrass. Pennisetum purpureum				
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	nu	nu
Nectarine. Prunus persica nectarina				
-fruit, fresh, (4)	4-20-430	15.8*	20	20
Oak. Querus spp				
-acorns, (4)	4-07-755	70.7	50	50
Oats. Avena sativa				
-hay, s-c, (1)	1-03-280	90.5	nu	nu
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	nu	nu
-straw, (1)	1-03-283	92.1	nu	nu
-aerial part, ensiled, (3)	3-03-298	31.0	nu	nu
-grain, (4)	4-03-309	89.7	80	40
Oats, wild. Avena fatua				
-wild, grain, (4)	4-03-394	91.0	nu	nu
Olives. Olea europaea				
-cannery residue, (4)	4-15-323	91.7	20	20
-pulp, dehy, (4)	4-15-322	93.5	20	20
Onion. Allium spp				
-refuse, dehy, (1)	1-15-325	89.4	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Finishing animals
		%	%	%
-seed screenings, (4)	4-15-324	89.1	10	10
Orchardgrass. *Dactylis glomerata*				
-hay, s-c, (1)	1-03-438	88.7	nu	nu
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	nu	nu
Palm. *Elaeis spp*				
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	20	20
Parsnip. *Pastinaca sativa*				
-roots, fresh, (4)	4-03-536	13.7	10	10
Pea. *Pisum spp*				
-split pea by-product, grnd, (1)	1-08-478	89.5	20	20
-straw, (1)	1-03-577	84.7	nu	nu
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	nu	nu
-seeds, dehy, (5)	5-20-135	90.5	20	20
-seeds, grnd, (5)	5-03-598	89.1	nu	nu
Peaches, *Prunus persica*				
-fruit, fresh, (4)	4-20-432	13.1	20	20
-fruit wo pits, dehy, (4)	4-13-452	90.0	20	20
Peanut. *Arachis hypogaea*				
-hulls, grnd, (1)	1-03-629	94.4	nu	nu
-hay, s-c, (1)	1-03-619	91.6	10	nu
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed toswine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Finishing animals
		%	%	%
-kernels w skins w hulls, (5)	5-03-653	93.4	nu	nu
Pears. Pyrus spp				
-fruit, fresh, (4)	4-03-660	17.3	20	20
Pecan. Carya illinoinsis				
-shells, grnd, (1)	1-20-428	86.0*	nu	nu
Pineapple. Ananas comosus				
-cannery residue, dehy, (4)	4-03-722	88.6	20	20
Pineapple bran				
Plums. Prunus domestica				
-fruits, fresh, (4)	4-20-433	14.3	20	20
Potato. Solanum tuberosum				
-process residue, dehy, (4)	4-03-775	88.4	50	50
Potato by-product, dried				
Potato pomace, dried				
Potato pulp, dried				
Potato waste, dried				
-roots, baked dehy, (4)	4-20-153	86.4	30	30
-roots, cooked, (4)	4-03-784	24.3	nu	nu
-roots, dehy grnd, (4)	4-07-850	91.1	nu	nu
Potato meal				
-roots, fresh, (4)	4-03-787	22.8	50	50
Poultry				
-feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5)	5-03-795	92.7	5	5
Hydrolyzed poultry feathers (AAFCO)				
Feather meal				
-viscera w feet w heads, dry or wet rendered dehy grnd, (5)	5-03-799	93.0	5	5
Poultry by-product meal (CFA)				

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Pricklypear. Opuntia spp -aerial part, fresh, (2)	2-01-061	16.8	nu	nu
Prunes. Prunus domestica -fruit, fresh, (4)	4-20-359	14.3	20	20
-fruit, dehy grnd, (4)	4-20-435	90.0	20	20
-fruit wo pits, dehy, (4)	4-20-434	90.0	20	20
Pumpkins. Cucurbita pepo -fruit, fresh, (4)	4-03-815	9.1	20	20
Ramie. Boehmeria nivea -leaves, dehy grnd, (1)	1-03-857	90.0	10	10
Rape. Brassica spp				
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	5	5
Rice. Oryza sativa -bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8	nu	nu
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	nu	nu
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
-polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	50	50
Rubbertree, para. Hevea, brasiliensis				
-seeds, extn unspecified caked, (5)	5-20-147	86.0*	nu	nu
Rutabagas. Brassica napobrassica				
-roots, fresh, (4)	4-04-001	11.4	20	20
Rye. Secale cereale				
-straw, (1)	1-04-007	91.0	nu	nu
-flour by-product, coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2	nu	nu
-grain, (4)	4-04-047	88.8	20	25
-distillers grains, dehy, (5) , Rye distillers dried grains (CFA) Rye distillers dried grains (AAFCO)	5-04-023	93.0	nu	nu
Ryegrass, Italian. Lolium multiflorum				
-Italian, aerial part, fresh, (2)	2-04-073	21.4	nu	nu
Safflower. Carthamus tinctorius				
-seeds, (4)	4-07-958	92.7	nu	nu
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7	20	20
Sage, black. Salvia mellifera				
-black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Sesame. Sesmum indicum				
-seeds, mech extd grnd, (5)	5-04-220	92.7	nu	nu
Silkworm.				
-pupae, dehy grnd, (5)	5-20-421	90.0	10	10
Shrimp				
-process residue, dehy grnd, (5)	5-13-541	90.0	5	5
Sorghum. *Sorghum vulgare*				
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	nu	nu
Sorghum, feterita. *Sorghum*, *vulgare*				
-grain, (4)	4-04-369	88.6	30	30
Sorghum, grain variety. *Sorghum vulgare*				
-aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	nu	nu
-grain, (4)	4-04-383	88.5	80	90
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	10	5
Sorghum, hegari. *Sorghum*, *vulgare*				
-grain, (4)	4-04-398	89.0	30	30
Sorghum, Johnsongrass. *Sorghum halepense*				
-hay, s-c, (1)	1-04-407	90.5	nu	nu
Sorghum, kafir. *Sorghum vulgare*, *caffrorum*				
-grain, (4)	4-04-428	89.2	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Sorghum, kaoliang. Sorghum, vulgare nervosum -grain, (4)	4-04-431	88.7	10	10
Sorghum, milo. Sorghum vulgare, subglabrescens -grain, (4)	4-04-444	89.0	80	90
Sorghum, sorgo. Sorghum vulgare, saccharatum -aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	nu	nu
Soybean. Glycine max -hay, s-c, (1)	1-04-558	88.9	nu	nu
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0	10	5
-straw, (1)	1-04-567	87.7	nu	nu
-aerial part, ensiled, (3)	3-04-581	27.2	nu	nu
-seeds, (5)	5-04-610	90.6	20	20
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	20	20
Spleens. see Cattle				
Squirreltail. Sitanion spp -aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu
Sugarcane. Saccharum officinarum -molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5	10	10

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Amount of feed (dry basis) Finishing animals
		%	%	%
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	10	10
Sunflower. Helianthus spp				
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0	10	10
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8	10	20
Sweetclover, yellow. Melilotus officinalis				
-yellow, seed screenings, (5)	5-08-007	87.3	nu	nu
Swine. Sus scrofa				
-lard, (4) Lard	4-04-790	100.0*	nu	nu
Timothy. Phleum Pratense				
-hay, s-c, late vegetative, (1)	1-04-881	87.0	nu	nu
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	nu	nu
-aerial part, ensiled, (3)	3-04-922	33.5	nu	nu
Tomato. Lycopersicon esculentum				
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	nu	nu
-pulp, wet, (5)	5-05-042	25.0	10	10
Turnip. Brassica rapa				
-roots, fresh, (4)	4-05-067	9.6	nu	nu
Vetch. Vicia spp				
-hay, s-c, (1)	1-05-106	88.2	nu	nu

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis) Sows and boars	Amount of feed (dry basis) Finishing animals
		%	%	%
Walnuts. Juglans spp				
-meats w shells, grnd, (4)	4-20-129	93.2	20	20
Watergrass. Hydrochloa caroliniensis				
-seeds, (4)	4-20-128	90.0	10	10
Wheat. Triticum spp				
-hay, s-e, (1)	1-05-172	89.7	nu	nu
-straw, (1)	1-05-175	90.9	nu	nu
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	nu	nu
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	10	5
-grain, (4)	4-05-211	88.5	80	90
-grain screenings, (4)	4-05-216	88.9	15	15
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	nu	nu
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*	1	nu
Wheatgrass. Agropyron spp				
-aerial part, fresh, mature, (2)	2-05-363	60.5	nu	nu
Wheatgrass, crested. Agropyron cristatum				
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	nu	nu
Whey. see Cattle				

Table 20. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to swine	International reference number	Dry matter	Amount of feed (dry basis)	
			Sows and boars	Finishing animals
		%	%	%
Yeast, active. *Saccharomyces cerevisiae* -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	2	2
Yeast, brewers Saccharomyces. *Saccharomyces cerevisiae* -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	2	2
Yeast, primary Saccharomyces. *Saccharomyces cerevisiae* -primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9	2	2

*Dry matter was estimated

Table 21. Age, live weight, gain and feed consumed (dry basis) for 12 strains of large white or bronze turkeys[a]

Hens				Toms			
Age	Live weight	Gain	Feed (dry basis)	Age	Live weight	Gain	Feed (dry basis)
Weeks	kg	g	g	Weeks	kg	g	g
8-12	2.8	57	153	7.5-12	3.2	73	180
12-14	4.0	72	189	12-16	5.8	103	263
14-15	4.8	72	207	16-19	8.5	107	328
15-16	5.4	72	220	19-20	10.0	107	351
16-17	5.8	70	225	20-21	10.8	107	369
17-18	6.2	68	225	21-22	11.6	107	369
18-19	6.7	68	234	22-23	12.3	107	372
19-20	7.2	66	243	23-24	13.0	107	396
				24-25	13.8	106	400
				25-26	14.4	105	436
				26-27	15.0	104	450
				27-28	15.8	102	482

[a] J. O. Anderson and D. C. Dobson, Animal Science Department, Utah State University, Logan, Utah. Unpublished data.

Note: The data in this table is probably more accurate than the data in table 22.

Table 22. Age, live weight, gain and feed consumed (dry basis) by bronze or white turkeys[a]

Hens				Toms		
Age in weeks	Live weight	Gain	Feed (dry basis)	Live weight	Gain	Feed (dry basis)
	kg	g	g	kg	g	g
8.5	2.1	50	130	2.4	70	171
10	2.6	52	148	3.5	72	198
11.5	3.3	54	166	4.1	74	236
12.5	3.7	54	194	4.7	76	243
15	4.5	54	216	6.1	78	261
17.5	5.4	54	231	7.4	78	279
20	6.2	52	234	8.8	70	288
23				9.9	78	306

[a] Adapted from National Research Council. Nutrient requirements of poultry. 1971. Printing and Publishing Office, National Academy of Science, 2101 Constitution Avenue, Washington, D.C.

Note: While this table is from the National Research Council, it is believed that the data in table 21 is more accurate

Table 23. Feed consumed by hens and toms[a]

Hens			Toms		
Age	Live weight	Feed (dry basis)	Age	Live weight	Feed (dry basis
Weeks	kg	g	Weeks	kg	g
19-20	7.2	243	27-28	15.8	482

[a] Adapted from National Research Council. Nutrient requirements of poultry. 1971. Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%	%	%
Alfalfa. Medicago sativa				
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	5	5
-aerial part, dehy grnd, mn 20% protein, (1)	1-00-024	91.5	5	5
-hay, s-c, early bloom, (1)	1-00-059	90.1	nu	nu
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	5	5
-aerial part, fresh, late vegetative, (2)	2-00-181	20.7	nu	nu
-aerial part, ensiled, (3)	3-00-212	27.3	nu	nu
-seed screenings, (5)	5-08-326	90.3	20	20
Almond. Prunus amygdalus -hulls, (4)	4-00-359	88.4	nu	nu
Animal -blood, dehy grnd, (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	3	3
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	10	10
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	92.6	10	7.5

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	10	7.5
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	2.5	2
Apples. Malus spp				
-fruit, fresh, (4)	4-00-421	15.9	1	1
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	5	5
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	5	5
Apricots. Prunus armeniaca				
-fruit, fresh, (4)	4-20-438	14.6	5	5
-fruit wo pits, dehy, (4)	4-15-311	90.0	5	5
Artichoke. Cynera scolymus				
-roots, fresh, (4)	4-00-430	20.5	nu	nu
Asparagus. Asparagus officinalis				
-stem butts, fresh, (2)	2-00-436	91.0	2.5	2.5
Avocado. Persea americana				
-fruit wo pits, grnd, (4)	4-15-312	91.4	5	5
Babassu. Orbignya spp				
-kernels, extn unspecified grnd, (5)	5-00-453	92.7	5	10

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Bakery				
-refuse, dehy, (4)	4-20-419	90.0	20	20
Banana. *Musa spp*				
-fruit, fresh, (4)	4-00-485	24.3	5	5
-peelings, dehy, grnd, (4)	4-00-486	88.0	nu	nu
Barley. *Hordeum vulgare*				
-hay, s-c, (1)	1-00-495	88.5	nu	nu
-straw, (1)	1-00-498	91.7	nu	nu
-grain screenings, (4)	4-00-542	88.9	nu	nu
-grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-159	90.0	50	70
-malt sprouts w hulls, dehy, mn 24% protein, (5) Malt sprouts (AAFCO)	5-00-545	92.3	25	25
Bean. *Phaseolus spp*				
-straw, (1)	1-00-585	88.4	nu	nu
-cannery residue, fresh (2)	2-00-587	9.4	nu	nu
Bean, kidney. *Phaseolus vulgaris*				
-kidney, seeds, (5)	5-00-600	88.9	10	7.5
Bean, lima. *Phaseolus limensis*				
-seeds, (4) Butter bean	4-15-317	90.0	3	5
Bean, mung. *Phaseolus aureus*				
-seeds, (5)	5-08-185	90.0	15	15
Bean, navy. *Phasiolus vulgaris*				
-seeds, (5)	5-00-623	89.7	10	7.5
Beet, mangels. *Beta spp*				
-roots, fresh, (4) Mangel, roots	4-00-637	13.2	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Beet, common. Beta vulgaris				
-leaves, dehy, (1)	1-20-418	90.0	5	5
Beet, sugar. Beta saccharifera				
-straw, (1)	1-00-644	81.6	nu	nu
-hulls, (1)	1-00-643	85.3	nu	nu
-sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	nu	nu
-crowns, fresh, (4)	4-00-648	18.0	nu	nu
-root tips (4)	4-20-436	19.2*	nu	nu
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses	4-00-668	79.1	2.5	2.5
-sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	nu	nu
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	nu	nu
Bermudagrass. Cynodon dactylon				
-hay, s-c, (1)	1-00-703	90.9	nu	nu
-aerial part, fresh, (2)	2-00-712	28.9	nu	nu
Bermudagrass, coastal. Cynodon dactylon				
-coastal, hay, s-c, (1)	1-00-716	91.0	nu	nu
Blood. see Animal				
Bluegrass, Kentucky. Poa pratensis				
-Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Bluestem. *Andropogon spp*				
-aerial part, fresh, early vegetative, (2)	2-00-821	26.8	nu	nu
Bread, white.				
-enriched, (4)	4-08-359	64.1	20	20
Broccoli. *Brassica oleracea botrytis*				
-aerial part, dehy, (4)	4-20-417	90.0	1	1
stems, fresh, (4)	4-00-884	45.1	nu	nu
Brome, cheatgrass. *Bromus tectorum*				
-cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	nu	nu
Brome, smooth. *Bromus inermis*				
-smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	nu	nu
Brussel, sprouts. *Brassica oleracea gemmifera*				
-heads fresh, (4)	4-08-187	14.8	nu	nu
Buckwheat. *Fagopyrum spp*				
-grain, (4)	4-00-994	87.8	25	25
-flour by-product wo hulls, coarse sifted, mx 10% fiber, (5) Buckwheat middlings (AAFCO)	5-00-991	88.7	25	25
Buffalograss. *Buchloe dactyloides*				
-aerial part, fresh, (2)	2-01-010	45.8	nu	nu
Burclover. *Medicago, lispida*				
-seeds, (4)	4-20-113	93.4	2	5
Buttermilk. see Cattle				

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Cabbage. Brassica oleracea, capitata -aerial part, fresh, (2)	2-01-046	9.4		
-aerial part, fresh, (4)	4-01-046	9.4	nu	nu
-aerial part, dehy, (4)	4-15-314	88.3	5	5
-cannery residue, (4)	4-15-313	15.8	1.5	1.5
Carob bean. Ceratonia siliqua -seeds, (5)	5-09-306	81.2	20	20
Carrot. Daucus spp -leaves, fresh, (4)	4-01-143	16.5	nu	nu
-pulp, wet grnd, (4)	4-15-315	14.0	5	5
-roots, dehy, (4)	4-20-148	90.0	10	10
-roots, fresh, (4)	4-01-145	11.9	nu	nu
Casein. see Cattle				
Cassava. Manihot spp -starch by-product, dehy, (4)	4-08-572	90.0	10	10
Castorbean. Ricinus communis -seeds, extn unspecified grnd, (5) Castor bean meal	5-20-420	90.0	10	10
Cattle, Bos spp -whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	3	3

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	2.5	2.5
-casein, milk acid precipitated dehy mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	nu	nu
-cheese rind, (5)	5-01-163	82.8	10	10
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	5	5
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	10	10
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%		
-cottage, cheese, (5)	5-08-001	21.0	5	5
-manure, dehy grnd, (7)	7-01-190	93.5	nu	nu
Cauliflower. Brassica aleracea botrytis				
-heads, fresh, (4)	4-08-189	9.0	1	1
Celery. Apium graveolens				
-aerial part, fresh, (4)	4-01-195	5.9	1	1
-stalks, fresh, (4)	4-01-197	6.3	1	1
-stalks, dehy, (4)	4-15-316	90.0	5	5
Chicken. Gallus domesticus				
-gizzards, raw, (5)	5-07-948	25.0	nu	nu
-manure, dehy, (5)	5-20-423	90.0	5	10
Chicken, broiler. Gallus, domesticus				
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	3	5
-manure w shavings added, dehy, (5)	5-20-425	91.0*	3	5
Citrus. Citrus spp				
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	nu	nu
-syrup, mn 45% invert sugar mn 71 degrees brix, (4)	4-01-241	66.9	nu	nu
Citrus, grapefruit. Citrus paradisi				
-fruit, fresh, (4)	4-01-242	13.6	nu	nu
-pulp, shredded, wet, (4)	4-01-243	14	nu	nu

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List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%	%	%
Citrus, lemon. Citrus limon				
-pulp, (4)	4-11-753	92.8	nu	nu
Citrus, orange. Citrus sinensis				
-pulp, ensiled, (3)	3-01-250	11.3	nu	nu
-fruit, fresh, cull, (4)	4-01-252	12.8	nu	nu
-cannery residue, dehy, (4)	4-15-318	90.6	nu	nu
-pulp, shredded wet, (4)	4-01-253	14.4	nu	nu
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	nu	nu
Clover, alsike. Trifolium hybridum				
-alsike, hay, s-c, (1)	1-01-313	87.7	nu	nu
-alsike, aerial part, fresh, (2)	2-01-316	22.4	nu	nu
Clover, crimson. Trifolium incarnatum				
-crimson, hay, s-c, (1)	1-01-328	88.9	nu	nu
-crimson, aerial part, fresh, (2)	2-01-336	17.6	nu	nu
Clover, ladino. Trifolium repens				
-ladino, hay, s-c, (1)	1-01-378	89.5	nu	nu
-ladino, aerial part, fresh, (2)	2-01-383	17.7	nu	nu
Clover, red. Trifolium pratense				
-red, hay, s-c, (1)	1-01-415	79.5	nu	nu
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	nu	nu
-red, seeds, (5)	5-08-004	87.9	nu	nu
-red, seed screenings, (5)	5-08-005	90.3	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Coconut. *Cocos nucifera*				
-meats, mech extd grnd, (5) Coconut meal, mechanical extracted (AAFCO) Copra meal, mechanical extracted (AAFCO)	5-01-572	92.8	15	25
Coffee. *Coffea spp*				
-hulls, (1)	1-11-479	90.0	nu	nu
Corn. *Zea mays*				
-aerial part, s-c, mature, (1)	1-02-772	68.1	nu	nu
-aerial part wo ears wo husks, s-c, mature, (1)	1-02-776	85.6	nu	nu
-cobs, grnd, (1) Ground corn cob (AAFCO)	1-02-782	89.8	nu	nu
-aerial part, ensiled, (3) Corn fodder silage	3-02-822	23.7	nu	nu
-ears w husks, ensiled, (3)	3-02-839	43.4*	nu	nu
-ears, grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	40	50
-grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	40	40
-distillers grains, dehy, (5) Corn distillers dried grains (CFA) Corn distillers dried grains (AAFCO)	5-02-842	93.1	5	10

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%		
-germ wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	5	5
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	10	10
Corn, dent yellow. Zea mays, indentata				
-dent yellow, grain, (4)	4-02-935	87.0	70	80
Cottage cheese. see Cattle				
Cotton. Gossypium spp				
-bolls, s-c, (1)	1-01-596	91.8	nu	nu
-gin by-product, (1)	1-08-413	90.5	nu	nu
-hulls, (1) cottonseed hulls (AAFCO)	1-01-599	90.8	nu	nu
-hulls wo lint, (1)	1-01-600	90.9	nu	nu
-seeds, grnd, (5)	5-01-608	92.7	nu	nu
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	10	10
Cowpea. Vigna Spp				
-hay, s-c, (1)	1-01-645	90.4	nu	nu
-seeds, (5) Blackeye bean	5-01-661	89.0	10	7.5

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List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Crab. *Callinectes sapidus, Cancer spp Paralithodes camschatica*				
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	5	5
Dates. *Phoenix dactylifera*				
-fruit, dehy, (4)	4-01-752	91.9	10	10
Deervetch, birdsfoot. *Lotus corniculatus*				
-birdsfoot, hay, s-c, (1)	1-05-044	89.7	nu	nu
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	nu	nu
Distillers grains. see Corn; see Grains; see Rye				
Distillers solubles. see Corn				
Digester tankage. see Animal				
Emmer. *Triticum dicoccum*				
-grain, (4)	4-01-830	90.8	20	25
Fenugreek. *Trigonella foenumgraecum*				
-seeds, (8)	8-01-856	90.7	25	25
Fescue, alta. *Festuca arundinacea*				
-alta, aerial part, fresh, (2)	2-01-889	23.9	nu	nu
Fescue, meadow. *Festuca elatior*				
-meadow, hay, s-c, (1) Fescue hay, tall	1-01-912	87.0	nu	nu
-meadow, aerial part, fresh, (2)	2-01-920	28.6	nu	nu

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List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Fig, common. Ficus carica				
-fruit, dehy, (4)	4-01-955	76.0	10	10
Fish				
-stickwater solubles, cooked dehy, mn 60% protein, (5) Dried fish solubles (AAFCO)	5-01-971	92.3	3	3
oil, (7) Blended fish oil (CFA) Fish oil (AAFCO)	7-01-965	100.0*	1	1
Fish, anchovy. Engraulis spp				
-anchovy, whole or cuttings, cooked mech extd dehy grnd, (5) Fish meal, anchovy	5-01-985	92.0	7.5	5
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family)				
-white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5) White fish meal (CFA) Fish, cod, meal Fish, cusk, meal Fish, haddock, meal Fish, hake, meal Fish, pollock, meal Fish, monkfish, meal Fish, skate, meal	5-02-025	91.0	7.5	5
Flax, common. Linum usitatissimum				
-fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	nu	nu
-hulls, (1)	1-02-037	92.0	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
-common, seed screenings, (4)	4-02-056	91.4	nu	nu
-common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	2.5	2.5
-seeds, (5)	5-02-052	90.8	3	3
Fly. Mesca domestica				
-pupae, dehy grnd, (5)	5-20-422	90.0	10	10
Gamagrass, eastern. Tripsacum dactyloides				
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	nu	nu
Gamagrass, Florida. Tripsacum floridanum				
-Florida, hay, s-c, (1)	1-02-087	92.3	nu	nu
Garbage.				
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	10	10
Grains.				
-screenings, mn 70% grain mx 6.5% ash, (4) Grain screenings (AAFCO)	4-02-156	90.0	nu	nu
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds (4) Uncleaned screenings (CFA)	4-02-153	92.1	nu	nu
-distillers grains, dehy, (5)	5-02-144	92.6	10	20

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Grama. *Bouteloua spp*				
-aerial part, fresh, midbloom, (2)	2-02-164	28.0*	nu	nu
-aerial part, fresh, mature, (2)	2-02-166	63.4	nu	nu
Grapes. *Vitis spp*				
-fruit, dehy, (4)	4-02-203	84.8	30	30
-fruit, dehy, cull, (4)	4-08-427	84.8	5	5
-fruit, fresh, (4)	4-02-204	18.1	2	nu
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	5	5
-pulp, fresh, (4) Grape marc, fresh	4-02-206	37.5	3	nu
-raisin syrup by-product, (4)	4-08-428	89.4	30	30
-seeds, (4)	4-20-133	85.0	nu	nu
-seeds, dehy grnd, (4)	4-08-082	90.0	3	nu
Guar. *Cyamopsis tetragonoloba*				
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	15	15
Hemp. *Cannabis sativa*				
-seeds, (5)	5-20-136	91.1	5	5
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	5	5
Hominy feed. see Corn grits by-product				
Hops. *Humulus spp*				
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.1	nu	nu
Ipilipil. *Leucaena leuocephala*				
-leaves, dehy grnd, (4)	4-20-446	91.0	3	3

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		%	%	%
Kale. *Brassica oleracea acephala*				
-aerial part, fresh (2)	2-02-446	11.6	.1	1
Lespedeza. *Lespedeza spp*				
-hay, s-c, midbloom, (1)	1-02-511	94.1	nu	nu
-aerial part, fresh, early vegetative, (2)	2-02-539	31.1	nu	nu
Lettuce. *Lactuca sativa*				
-aerial part, dehy grnd, (4)	4-15-319	90.0	5	5
-aerial part, fresh, (2)	2-02-624	5.3	1	1
-refuse, dehy, (4)	4-15-320	90.0	5	5
Livers. see Animal; see Cattle				
Lobster. *Homarus americanus*				
-process residue, dehy grnd, (5)	5-02-635	90.0	4	4
Locust				
-seeds, (5)	5-20-429	90.8	4	5
Manure. see Cattle				
Meat meal. see Animal				
Meat meal tankage. see Animal				
Melons, pie. *Curcurbita spp*				
-fruit w seeds, fresh, (4)	4-08-459	4.1	1	1
Mesquite. *Prosopis spp*				
-seeds w pods, s-c, (1)	1-15-321	91.5	nu	nu
Milk. see Cattle				
Millet. *Setaria spp*				
-grain, (4)	4-03-098	89.9	20	40

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List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%	%	%
Molasses. see Beet; see Sugarcane; see Citrus				
Mustard. Brassica spp				
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	15	15
Napiergrass. Pennisetum purpureum				
-aerial part, fresh, late vegetative, (2)	2-03-158	25.6	nu	nu
Nectarine. Prunus persica nectarina				
-fruit, fresh, (4)	4-20-430	15.8*	nu	nu
Oak. Querus spp				
-acorns, (4)	4-07-755	70.7	3	10
Oats. Avena sativa				
-hay, s-c, (1)	1-03-280	90.5	nu	nu
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	nu	nu
-straw, (1)	1-03-283	92.1	nu	nu
-aerial part, ensiled, (3)	3-03-298	31.0	nu	nu
-grain, (4)	4-03-309	89.7	25	50
Oats, wild. Avena fatua				
-wild, grain, (4)	4-03-394	91.0	nu	nu
Olives. Olea europaea				
-cannery residue, (4)	4-15-323	91.7	5	5
-pulp, dehy, (4)	4-15-322	93.5	5	5
Onion. Allium spp				
-refuse, dehy, (1)	1-15-325	89.4	3	5

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%	%	%
-seed screenings, (4)	4-15-324	89.1	3	5
Orchardgrass. Dactylis glomerata				
-hay, s-c, (1)	1-03-438	88.7	nu	nu
-aerial part, fresh, early vegetative, (2)	2-03-440	23.9	nu	nu
Palm. Elaeis spp				
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	15	25
Parsnip. Pastinaca sativa				
-roots, fresh, (4)	4-03-536	13.7	5	5
Pea. Pisum spp				
-split pea by-product, grnd, (1)	1-08-478	89.5	13	40
-straw, (1)	1-03-577	84.7	nu	nu
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	nu	nu
-seeds, dehy, (5)	5-20-135	90.5	13	40
-seeds, grnd, (5)	5-03-598	89.1	10	7.5
Peaches, Prunus persica				
-fruit, fresh, (4)	4-20-432	13.1	1	1
-fruit wo pits, dehy, (4)	4-13-452	90.0	5	5
Peanut. Arachis hypogaea				
-hulls, grnd, (1)	1-03-629	94.4	nu	nu
-hay, s-c, (1)	1-03-619	91.6	nu	nu
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	10	10

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%	%	%
-kernels w skins w hulls, (5)	5-03-653	93.4	nu	nu
Pears. *Pyrus spp*				
-fruit, fresh, (4)	4-03-660	17.3	1.5	1.5
Pecan. *Carya illinoinsis*				
-shells, grnd, (1)	1-20-428	86.0*	nu	nu
Pineapple. *Ananas comosus*				
-cannery residue, dehy, (4) Pineapple bran	4-03-722	88.6	nu	5
Plums. *Prunus domestica*				
-fruits, fresh, (4)	4-20-433	14.3	1.5	1.5
Potato. *Solanum tuberosum*				
-process residue, dehy, (4) Potato by-product, dried Potato pomace, dried Potato pulp, dried Potato waste, dried	4-03-775	88.4	nu	nu
-roots, baked dehy, (4)	4-20-153	86.4	7	20
-roots, cooked, (4)	4-03-784	24.3	nu	nu
-roots, dehy grnd, (4) Potato meal	4-07-850	91.1	nu	nu
-roots, fresh, (4)	4-03-787	22.8	nu	nu
Poultry				
-feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5) Hydrolyzed poultry feathers (AAFCO) Feather meal	5-03-795	92.7	2	2
-viscera w feet w heads, dry or wet rendered dehy grnd, (5) Poultry by-product meal (CFA)	5-03-799	93.0	10	7.5

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Pricklypear. Opuntia spp				
-aerial part, fresh, (2)	2-01-061	16.8	mu	mu
Prunes. Prunus domestica				
-fruit, fresh, (4)	4-20-359	14.3	1.5	1.5
-fruit, dehy grnd, (4)	4-20-435	90.0	3	5
-fruit wo pits, dehy, (4)	4-20-434	90.0	7	10
Pumpkins. Cucurbita pepo				
-fruit, fresh, (4)	4-03-815	9.1	5	5
Ramie. Boehmeria nivea				
-leaves, dehy grnd, (1)	1-03-857	90.0	2	3
Rape. Brassica spp				
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	7	10
Rice. Oryza sativa				
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.8	10	10
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	40	50
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	40	50

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis) Young and finishing turkeys	Amount of feed (dry basis) Hens and toms (breeder diets)
		%	%	%
-polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	10	10
Rubbertree, para. Hevea, brasiliensis -seeds, extn unspecified caked, (5)	5-20-147	86.0*	5	5
Rutabagas. Brassica napobrassica -roots, fresh, (4)	4-04-001	11.4	1	1
Rye. Secale cereale -straw, (1)	1-04-007	91.0	nu	nu
-flour by-product, coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2	5	5
-grain, (4)	4-04-047	88.8	5	5
-distillers grains, dehy, (5) Rye distillers dried grains (CFA) Rye distillers dried grains (AAFCO)	5-04-023	93.0	2.5	2.5
Ryegrass, Italian. Lolium multiflorum -Italian, aerial part, fresh, (2)	2-04-073	21.4	nu	nu
Safflower. Carthamus tinctorius -seeds, (4)	4-07-958	92.7	10	10
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7	10	10
Sage, black. Salvia mellifera -black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Sesame. Sesmum indicum				
-seeds, mech extd grnd, (5)	5-04-220	92.7	10	10
Silkworm.				
-pupae, dehy grnd, (5)	5-20-421	90.0	10	10
Shrimp				
-process residue, dehy grnd, (5)	5-13-541	90.0	5	5
Sorghum. Sorghum vulgare				
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	nu	nu
Sorghum, feterita. Sorghum, vulgare				
-grain, (4)	4-04-369	88.6	60	60
Sorghum, grain variety. Sorghum vulgare				
-aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	nu	nu
-grain, (4)	4-04-383	88.5	70	80
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	2.5	2.5
Sorghum, hegari. Sorghum, vulgare				
-grain, (4)	4-04-398	89.0	50	50
Sorghum, Johnsongrass. Sorghum halepense				
-hay, s-c, (1)	1-04-407	90.5	nu	nu
Sorghum, kafir. Sorghum vulgare, caffrorum				
-grain, (4)	4-04-428	89.2	70	80

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Sorghum, kaoliang. *Sorghum, vulgare nervosum*				
-grain, (4)	4-04-431	88.7	60	60
Sorghum, milo. *Sorghum vulgare, subglabrescens*				
-grain, (4)	4-04-444	89.0	70	80
Sorghum, sorgo. *Sorghum vulgare, saccharatum*				
-aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	nu	nu
Soybean. *Glycine max*				
-hay, s-c, (1)	1-04-558	88.9	nu	nu
-hulls, (1) Soybean hulls (AAFCO) Soybran flakes	1-04-560	91.0	nu	nu
-straw, (1)	1-04-567	87.7	nu	nu
-aerial part, ensiled, (3)	3-04-581	27.2	nu	nu
-seeds, (5)	5-04-610	90.6	nu	nu
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	30	25
Spleens. see Cattle				
Squirreltail. *Sitanion spp*				
-aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu
Sugarcane. *Saccharum officinarum*				
-molasses, dehy, (4) Cane molasses, dried Molasses, cane, dried	4-04-695	90.5	2.5	2.5

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
- -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	2.5	5
Sunflower. Helianthus spp				
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340	90.0	15	15
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	92.8	15	10
Sweetclover, yellow. Melilotus officinalis				
-yellow, seed screenings, (5)	5-08-007	87.3	nu	nu
Swine. Sus scrofa				
-lard, (4) Lard	4-04-790	100.0*	6	4
Timothy. Phleum Pratense				
-hay, s-c, late vegetative, (1)	1-04-881	87.0	nu	nu
-aerial part, fresh, late vegetative, (2)	2-04-903	25.9	nu	nu
-aerial part, ensiled, (3)	3-04-922	33.5	nu	nu
Tomato. Lycopersicon esculentum				
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	nu	nu
-pulp, wet, (5)	5-05-042	25.0	3	3
Turnip. Brassica rapa				
-roots, fresh, (4)	4-05-067	9.6	nu	nu
Vetch. Vicia spp				
-hay, s-c, (1)	1-05-106	88.2	nu	nu

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Walnuts. *Juglans spp*				
-meats w shells, grnd, (4)	4-20-129	93.2	3	5
Watergrass. *Hydrochloa caroliniensis*				
-seeds, (4)	4-20-128	90.0	50	50
Wheat. *Triticum spp*				
-hay, s-c, (1)	1-05-172	89.7	nu	nu
-straw, (1)	1-05-175	90.9	nu	nu
-aerial part, fresh, early vegetative, (2)	2-05-176	22.9	nu	nu
-bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	10	10
-grain, (4)	4-05-211	88.5	70	85
-grain screenings, (4)	4-05-216	88.9	nu	nu
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	2	2
-germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0*	1	1
Wheatgrass. *Agropyron spp*				
-aerial part, fresh, mature, (2)	2-05-363	60.5	nu	nu
Wheatgrass, crested. *Agropyron cristatum*				
-crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	nu	nu
Whey. see Cattle				

Table 24. Maximum amounts of feed (dry basis) which could be in the diet of animals

List of feeds commonly fed to turkeys	International reference number	Dry matter	Amount of feed (dry basis)	
			Young and finishing turkeys	Hens and toms (breeder diets)
		%	%	%
Yeast, active. *Saccharomyces cerevisiae* -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	2	2
Yeast, brewers Saccharomyces. *Saccharomyces cerevisiae* -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	2.5	2.5
Yeast, primary Saccharomyces. *Saccharomyces cerevisiae* -primary Saccharomyces, dehy, mn 40% protein, (7)	7-05-533	92.9	2.5	2.5

*Dry matter was estimated

SECTION 4

FEED SUBSTITUTION TABLES

This section consists of a feed substitution table for each animal. The base feed is underlined and the feeds within each feed class for each animal is compared to it.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Class 1 feeds (forages and roughages)					All the dry non-legume forages listed herein are satisfactory when needed minerals and either a limited amount of legume hay or a protein supplement are supplied to balance the ration.
Alfalfa, hay, s-c, early bloom, (1)	1-00-059	90.1	100	100	Does away with or lessens protein supplement requirements.
Barley, hay, s-c, (1)	1-00-495	87.7	70	100	
Canarygrass, reed, hay, s-c, (1)	1-01-104	88.8	70	100	
Clover, crimson, hay, s-c, (1)	1-01-328	88.9	90-100	100	Crimson clover hay has a considerably lower value if not cut at an early stage.
Clover, red, hay, s-c, (1)	1-01-415	79.5	90-100	100	If the rest of the ration is adequate in protein, clover hay will be equal to alfalfa in feeding value; otherwise it will be lower.
Clover-timothy, hay, s-c, (1)	1-01-487	88.5	80-90	100	Value of clover-timothy mixed hay depends on the proportion of clover present and the stage of maturity at which it is cut.
Corn, aerial part, s-c, mature, (1)	1-02-772	68.1	75	100	
Corn, aerial part wo ears wo husks, s-c, (1) Corn stover, sun-cured	1-02-778	79.4	35	50	Too low in nutrients to be of much value in finishing rations.
Cowpea, hay, s-c, (1)	1-01-645	90.4	90-100	100	
Grass-legume, hay, s-c, (1)	1-02-301	89.5	80-90	100	Value depends on the proportion of legume present and the stage of maturity at which it is cut.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Lespedeza, hay, s-c, (1)	1-02-522	91.7	80-100	100	Feeding value of lespedeza hay varies considerably with stage of maturity at which it is cut.
Mint, hay, s-c, (1)	1-03-124	87.5	80-95	75	Cattle tire of mint hay when it is fed as the only roughage for extended periods.
Native plants, intermountain hay, s-c, (1) Meadow hay	1-03-181	93.4	65-70	100	
Oats, hay, s-c, (1)	1-03-280	90.7	75	100	
Pea, straw, (1)	1-03-577	84.7	45-75	75	
Pea, hay, s-c, (1)	1-03-572	88.0	100-110	75	Can constitute only roughage for finishing cattle.
Sorghum, grain variety, aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	70	100	
Sorghum, Johnsongrass, hay, s-c, (1)	1-04-407	90.5	70	100	
Sorghum, atlas, aerial part, wo heads, s-c, (1) Sorghum, atlas, stover	1-04-336	75.0	35	50	Too low in nutrients to be of much value in finishing rations.
Sorghum, sudangrass, hay, s-c, (1)	1-04-480	89.8	70	100	
Soybean, hay, s-c	1-04-558	88.9	85-90	50-75	Lower value than alfalfa hay, largely due to greater wastage in feeding. It may cause scouring when fed alone.

Table 25 Feed Substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Sweetclover, hay, s-c, (1)	1-04-754	91.3	100	100	Value of sweet clover hay varies widely. Second year sweet clover hay is less desirable than first year sweet clover hay and is more apt to cause sweet clover disease.
Timothy, hay, s-c, (1)	1-08-893	88.6	70	100	
Vetch-oats, hay, s-c, (1)	1-05-132	87.6	80-90	100	The higher the proportion of vetch, the higher the value.
Wheat, hay, s-c, (1)	1-05-172	86.4	70	100	

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 3 feeds (silage)					
Alfalfa, hay, s-c, early bloom, (1)	1-00-059	90.1	100	100	
Note: Silages are usually compared to hays even though they are a class 1 feed.					
Alfalfa, aerial part, ensiled, (3)	3-00-212	28.3	33.3-50	50-85	When alfalfa silage replaces corn silage, more energy feed must be provided but less protein.
Apples, pulp, ensiled, (3)	3-00-420	21.4	17-25	50-85	Usually fed as a substitute for corn or grass silage. 50% the value of corn silage. Sometimes fed out of a stack or trench silo.
Beet, sugar, aerial part w crowns, ensiled, (3)	3-00-660	24.8	17-25	33.3-50	Feed 2 oz. of finely ground limestone or chalk with each 100 lbs. of tops, as calcium changes the oxalic acid to insoluble calcium oxalate.
Corn, aerial part, ensiled, (3)	3-02-822	23.7	33.3-50	50-85	
Corn, cannery residue, ensiled, (3)	3-02-837	22.5	26-40	50-85	
Grass-legume, aerial part, ensiled, (3)	3-02-303	28.9	32-47	50-85	Unless grain is added as a preservative, grass silage requires more energy feed, but less protein supplement than corn silage when fed to finishing cattle.
Grass, aerial part, ensiled, (3)	3-02-221	27.9	30-45	50-85	For finishing cattle, grass silage must be supplemented with additional energy feeds, such as cereal grain or molasses, to be of the same value as corn silage.
Oats, aerial part, ensiled, (3)	3-03-298	31.0	32-47	50-85	Must be chopped finely to exclude air from silo.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Pea, aerial part wo seeds, ensiled, (3) Peavine silage	3-03-596	24.5	33.3-50	50-85	Unless grain is added as a preservative, peavine silage requires more energy feed, but less protein supplement than corn silage when fed finishing cattle.
Potato, roots, ensiled, (3)	3-03-768	24.4	25-30	50-75	About 75% the value of corn silage.
Sorghum, aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	32-47	50-85	For finishing cattle, 85 to 90% as valuable as corn silage and must be supplemented in the same manner as corn silage.
Sorghum, sorgo, aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	25-30	50-85	Nearly equal to grain varieties in value per acre because of greater yield.
Sunflower, aerial part, ensiled, (3)	3-04-736	22.5	25-35	50-85	65 to 75% value of corn silage. Somewhat unpalatable and may cause constipation.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 4, energy feeds					
Corn, dent, gr 2 US mn wt 54 lb per bushel, (4)	4-02-915	85.4	100	100	The most important concentrate for finishing cattle in the U.S. Grind coarsely unless pigs follow cattle.
Apples, fruit fresh, (4)	4-00-421	17.9	17-25	50-85	Do not feed more than 25 lbs./cow. Not recommended for finishing cattle. Danger of choking when fed whole. Relatively high handling cost.
Apples, pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	82-86	33.3	
Barley, grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-156	90.0	88	25-100	The heavier the barley and the smaller the proportion of hulls, the higher the feeding value. Pigs following barley-fed cattle produce less pork than where corn is fed. Grind coarsely for cattle. In Canada, where considerable barley is fed, it is often used as the only basal feed in the ration once animals are accustomed to it.
Beet, sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses (AAFCO)	4-00-668	79.1	65-90	10-40	Value is highest when used as an appetizer. May be laxative if fed at levels above 6 lbs. daily.
Beet, sugar, pulp dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	90-95	33.3-50	
Beet, sugar, molasses, dehy, (4)	4-00-672	92.2	90-95	33.3-50	
Beet, sugar, pulp, wet, (4)	4-00-671	11.4	25	33.3-50	50% the value of corn silage.
Buckwheat, grain, (4)	4-00-994	87.7	55-75	33.3	Should be ground and mixed with other grains.
Carrot, roots, fresh, (4)	4-01-145	11.9	10-15	20-25	Store 3 to 4 weeks before using; fresh carrots cause scouring. Feed whole or sliced.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Citrus, syrup, mn 45% invert sugar mn 71 degrees brix, (4) Citrus molasses (AAFCO)	4-01-241	66.9	65-90	10-40	
Citrus, pulp wo fines, shredded dehy, (4)	4-01-237	90.2	85-90	25-33.3	
Corn, ears, grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	85-90	100	
Corn, grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (CAAFCO)	4-02-887	89.8	100	50	
Emmer, grain, (4)	4-01-830	90.7	70-90	30-100	Similar to oats.
Grains, screenings, refuse mx 100% small weed seeds chaff hulls dust scourings noxious seeds, (4)	4-02-151	90.4	30-90	25	Should be finely ground in order to kill noxious weed seeds. Quality varies; good quality screenings are equal to oats, whereas poor quality screenings resemble straw.
Oats, grain, grnd, (4)	4-08-471	89.8	70-90	10-100	Valuable for young stock, for breeding stock and for getting animals on feed. Oats have lowest value for finishing cattle and should be limited to one-third of such rations. Also the feeding value of oats varies according to the test weight per bushel. Grind for cattle.
Potatoes, roots, fresh, (4)	4-03-787	22.8	20-25	85	When fed with alfalfa hay, they are worth about 80% as much per ton as corn silage. Do not feed frozen. Sunburned, decomposed, or sprouted potatoes should not make up more than 10% of potatoes fed. Keep steers' heads down while eating to prevent choking.

Table 25 Feed substitution table for beef cattle

Feedstuff	Inter national reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Potatoes, roots, dehy grnd, (4)	4-07-850	91.1	90-95	50	
Rice, grain w hulls, (4) Rough rice Paddy rice	4-03-939	88.8	80	100	
Rice, bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4) Rice bran (AAFCO)	4-03-928	90.7	66.7-75	33.3	
Rice, polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	88	25	
Rye, grain, (4)	4-04-047	88.2	100	33.3	Not palatable when fed in larger amounts.
Spelt, grain, (4)	4-04-651	89.6	70-90	30-100	Similar to oats.
Sorghum, grain variety, grain, (4)	4-04-383	88.5	90-95	100	All varieties have about the same feeding value. Grind for cattle.
Sugarcane, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.0	65-90	10-40	Value is highest when used as an appetizer.
Sweetpotato, roots, fresh, (4)	4-04-788	30.6	25	85	
Sweetpotato, roots, dehy grnd, (4)	4-08-536	90.2	95-100	50	Dehydrated sweet potatoes are more palatable than dehydrated Irish potatoes.
Wheat, grain, (4)	4-05-211	88.3	100-105	50	Grind coarsely.
Wheat, bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	70-90	25-33.3	Because of its bulk and fiber, bran is not desirable for finishing rations. Bran is valuable for young animals, for breeding animals, and for starting animals on feed.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Wheat, flour by-product mill run, mx 9.5% fiber, (4)	4-05-206	90.1	95	33.3	Sometimes fed to the breeding herd, to young calves, and to finishing cattle being started on feed.
Wood, molasses, (4)	4-05-502	61.7	50-65	10-20	Not palatable.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 5 feeds (protein supplements)					
Soybean, seeds, solv extd grnd mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.1	100	100	Slightly laxative effect
Alfalfa, seed screenings, (5)	5-08-326	90.3	70-75	50	Grind finely to destroy weed seeds.
Bean, navy, seeds, (5)	5-00-623	89.7	65-75	15	Best when cooked, but can also be fed raw. When cooked, 3 to 4 lbs./per head daily; when raw, 1 to 2 lbs. Scouring may occur if they constitute more than 15% of total ration.
Clover, seed screenings, (5)	5-01-289	88.1	70-75	50	Grind finely to destroy weed seeds.
Coconut, meats, extn unspecified grnd, (5) Coconut meal (CFA) Copra meal (CFA)	5-01-570	88.2	90-100	50	
Corn, gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.4	65-75	50 -100	
Corn, gluten, wet milled dehy, (5) Corn gluten meal (CFA) Corn gluten meal (AAFCO)	5-02-900	91.1	90-100	50	Somewhat unpalatable.
Cotton, seeds w some hulls, pre-press solv-extd grnd, 41% protein, (5) Cottonseed meal, pre-press solvent extracted 45% protein	5-07-872	91.0	100	100	Among practical cattlemen, the feeling persists that cottonseed meal has a constipating effect some experimental work to the contrary. Although it may be fed as the only protein supplement, best results are secured when it is fed with linseed meal for finishing cattle.
Flax, seeds, grnd, commercial, (5) Flax seed mean (CFA) Ground Flaxseed (CFA)	5-02-042	95.7	(For other than finishing cattle)100. (For finishing cattle) 120-140	100 100	Linseed meal has laxative effect. Some cattle will not tolerate more than 5 to 8% linseed meal in the ration. Higher value for finishing cattle due to both greater efficiency and higher selling price of the cattle because of the increased bloom.

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Grains, brewers grains, dehy, mx 3% dried spent hops, (5) Brewers dried grains (CFA) Brewers dried grains (AAFCO)	5-02-141	91.0	55-65	50	Not very palatable. Fed chiefly to dairy cattle. Too bulky and usually too costly to be used in finishing rations.
Grains, brewers grains, wet, (5)	5-02-142	23.8	13-15	33.3	Grains usually come from barley. Best to haul and feed directly. Can be stored in silo if salt is added at rate of 25 lbs. per ton of grains.
Grains, distillers grains, dehy, (5)	5-02-144	92.6	65-70	100	Rye distillers' dried grains are of lower value than similar products made from corn or wheat. Distillers' dried grains are used chiefly for dairy cattle.
Grains, distillers solubles, dehy, (5)	5-02-147	92.1	70	100	The chief difference between distillers' dried grains and distillers' dried solubles is the higher B vitamin content of the latter. Normally this is not important for cattle and sheep.
Pea, seeds, (5)	5-03-600	89.5	60-75	50	Peas appear to be unpalatable to certain individuals. Also, there is bloat hazard if they exceed 40% of the ration.
Peanut, kernels, extn unspecified grnd, 39% protein, (5)	5-03-646	90.2	100	100	
Safflower, seeds, extn unspecified grnd (5)	5-04-108	92.2	40-45	100	Safflower meal with hulls is unpalatable. Thus, it should be mixed with more palatable feeds.
Soybean, seeds, (5)	5-04-610	90.6	95-100	100	Not so satisfactory for finishing calves. Soybean allowance should be limited to amount necessary to balance the ration. Larger amounts may be unduly laxative and throw cattle "off feed."

Table 25 Feed substitution table for beef cattle

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Sunflower, seeds, extn unspecified grnd, (5)	5-04- 737	89.7	95-100	100	

Chickens do not utilize fruits with pits. Castorbeans need to be detoxified. Beans, peas and soybeans need to be heat treated. Wet materials are seldom used by poultry. The value of Alfalfa, hay, s-c, depends on the amounts of fiber and carotene content.

Table 26. Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Class 1 feeds (forages and roughages)								
Alfalfa. Medicago sativa								
-aerial part, dehy, mn 20% protein, (1)	1-00-024	91.5	100	100	100	100	100	100
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	100	100	100	100	100	100
-hay, s-c, early bloom, (1)	1-00-059	90.1	90	100	90	100	90	100
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	70	100	70	100	60	100
Barley, Hordeum vulgare								
-hay, s-c, (1)	1-00-495	88.5	nu	nu	nu	nu	nu	nu
-straw, (1)	1-00-498	91.7	nu	nu	nu	nu	nu	nu
Bean. Phaseolus spp								
-aerial part wo seeds, s-c grnd, (1)	1-20-151	90.0	nu	nu	nu	nu	nu	nu
-straw, (1)	1-00-585	88.4	nu	nu	nu	nu	nu	nu
Beet, common. Beta vulgaris								
-leaves, dehy, (1)	1-20-418	90.0	90	100	90	100	80	100
Beet, sugar. Beta saccharifera								
-sugar, hulls, (1)	1-00-643	85.3	nu	nu	nu	nu	nu	nu
-sugar, straw, (1)	1-00-644	81.6	nu	nu	nu	nu	nu	nu
Bermudagrass. Cynodon dactylon								
-hay, s-c, (1)	1-00-703	90.9	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Bermudagrass, coastal. Cynodon dactylon								
-coastal, hay, s-c, (1)	1-00-716	91.0	nu	nu	nu	nu	nu	nu
Clover, alsike. Trifolium hybridum								
-alsike hay, s-c, (1)	1-01-313	87.7	nu	nu	nu	nu	nu	nu
Clover, crimson. Trifolium incarnatum								
-crimson, hay, s-c, (1)	1-01-328	88.9	nu	nu	nu	nu	nu	nu
Clover, ladino. Trifolium repens								
-ladino hay, s-c, (1)	1-01-378	89.5	nu	nu	nu	nu	nu	nu
Clover, red. Trifolium pratense								
-red hay, s-c, (1)	1-01-415	79.5	nu	nu	nu	nu	nu	nu
Coffee. Coffea spp								
-hulls, (1)	1-11-479	90.0	nu	nu	nu	nu	nu	nu
Corn. Zea mays								
-aerial part, s-c, mature, (1) corn fodder, sun-cured mature	1-02-772	68.1	nu	nu	nu	nu	nu	nu
-aerial part wo ears wo husks, s-c, mature, (1) corn stover, sun-cured, mature	1-02-776	85.6	nu	nu	nu	nu	nu	nu
-cobs, grnd, (1) Ground corn cob (AAFCO)	1-02-782	89.8	nu	nu	nu	nu	nu	nu
Cotton. Gossypium spp								
-bolls, s-c, (1)	1-01-596	91.8	nu	nu	nu	nu	nu	nu
-gin by-product, (1) cotton gin trash	1-08-413	90.3	nu	nu	nu	nu	nu	nu
-hulls, (1) Cottonseed hulls (AAFCO)	1-01-599	90.8	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower-diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
-hulls wo lint (1) cottonseed hull bran	1-01-600	90.9	nu	nu	nu	nu	nu	nu
Cowpea. *Vigna spp*								
-hay, s-c, (1)	1-01-645	90.4	nu	nu	nu	nu	nu	nu
Deervetch, birdsfoot. *Lotus corniculatus*								
-birdsfoot, hay, s-c, (1)	1-05-044	89.7	nu	nu	nu	nu	nu	nu
Fescue, meadow. *Festuca elatior*								
-meadow hay, s-c, (1)	1-01-912	87.0	nu	nu	nu	nu	nu	nu
Flax, common. *Linum usitatissimum*								
-com[illegible], fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	nu	nu	nu	nu	nu	nu
-hulls, (1)	1-02-037	92.0	nu	nu	nu	nu	nu	nu
Gammagrass, Florida. *Tripsacum floridanum*								
-Florida hay, s-c, (1)	1-02-087	92.3	nu	nu	nu	nu	nu	nu
Hops. *Humulus spp*								
-spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.3	nu	nu	nu	nu	nu	nu
Lespedeza. *Lespedeza spp*								
-hay, s-c, midbloom, (1)	1-02-511	94.1	nu	nu	nu	nu	nu	nu
Mesquite. *Prosopis spp*								
-seeds w pods, s-c, (1)	1-15-321	91.5	nu	nu	nu	nu	nu	nu
Oats. *Avena sativa*								
-hay, s-c, (1)	1-03-280	90.5	nu	nu	nu	nu	nu	nu
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	20	80	nu	nu	nu	nu
-straw (1)	1-03-283	92.1						

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Onion. Allium spp -refuse, dehy, (1)	1-15-325	89.4	30	80	nu	nu	nu	nu
Orchardgrass. Dactylis glomerata -hay, s-c, (1)	1-03-438	88.7	nu	nu	nu	nu	nu	nu
Pea. Pisum spp -split pea by-product, grnd, (1) Pea feed Pea meal	1-08-478	89.5	80	50	80	50	80	50
-straw, (1)	1-03-577	84.7	nu	nu	nu	nu	nu	nu
Peanut. Arachis hypogaea -hulls, grnd, (1)	1-03-629	94.4	nu	nu	nu	nu	nu	nu
Pecan. Carya illinoinsis -shells, grnd, (1)	1-20-428	86.0*	nu	nu	nu	nu	nu	nu
Ramie. Boehmeria nivea -leaves, dehy grnd, (1)	1-03-857	90.0	90	50	90	50	90	50
Rye. Secale cereale -straw, (1)	1-04-007	91.0	nu	nu	nu	nu	nu	nu
Seaweed, kelp. Laminariales (order) Fucales (order) -whole, dehy grnd, (1)	1-20-424	91.3					nu	nu
Sorghum, grain variety. Sorghum vulgare -grain variety aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	nu	nu	nu	nu	nu	nu
Sorghum, Johnsongrass. Sorghum halepense -Johnsongrass, hay, s-c, (1)	1-04-407	90.5	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Soybean. Glycine max								
-hay, s-c, (1)	1-04-558	88.9	nu	nu	nu	nu	nu	nu
-hulls, (1) Soybean hulls (AAFCO)	1-04-560	91.6	25	50	nu	nu	nu	nu
-straw, (1) Soybran flakes	1-04-567	87.7	nu	nu	nu	nu	nu	nu
Timothy. Phleum pratense								
-hay, s-c, late vegetative, (1)	1-04-881	87.0	nu	nu	nu	nu	nu	nu
Vetch. Vicia spp								
-hay, s c, (1)	1-05-106	88.2	nu	nu	nu	nu	nu	nu
Wheat. Triticum spp								
-hay, s-c, (1)	1-05-172	89.7	nu	nu	nu	nu	nu	nu
-straw, (1)	1-05-175	90.9	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Class 2 feeds (pasture, range, plants, and forages fed green)								
Alfalfa. Medicago sativa -aerial part, dehy, mn 20% protein, (1)	1-00-024	91.5	100	100	100	100	100	100
-aerial part, fresh, late vegetative, (2)	2 00-181	20.7	25	25	25	25	nu	nu
Asparagus. Asparagus officinalis -stem butts, fresh, (2)	2-00-436	91.0	50	50	40	50	30	20
Bean. Phaseolus spp -cannery residue, fresh, (2)	2-00-587	9.4	10	25	10	25	nu	nu
Beet, sugar. Beta saccharifera -sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	nu	nu	nu	nu	nu	nu
Bermudagrass. Cynodon dactylon -aerial part, fresh, (2)	2-00-712	28.9	nu	nu	nu	nu	nu	nu
Bluegrass, Kentucky. Poa pratensis -Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	30	100	30	100	30	100
Bluestem. Andropogon spp -aerial part, fresh, early vegetative, (2)	2-00-821	26.8	nu	nu	nu	nu	nu	nu
Brome, cheatgrass. Bromus tectorum -cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.0*	nu	nu	nu	nu	nu	nu
Brome, smooth. Bromus inermis -smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Buffalograss. Buchloe dactyloides								
-aerial part, fresh, (2)	2-01-046	9.4	nu	nu	nu	nu	nu	nu
Clover, alsike. Trifolium hybridum								
-alsike, aerial part, fresh, (2)	2-01-316	22.4	nu	nu	nu	nu	nu	nu
Clover, crimson. Trifolium incarnatum								
-crimson, aerial part, fresh, (2)	2-01-336	17.6	nu	nu	nu	nu	nu	nu
Clover, ladino. Trifolium repens								
-ladino, aerial part, fresh, (2)	2-01-383	17.7	nu	nu	nu	nu	nu	nu
Clover, red. Trifolium pratense								
-red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	nu	nu	nu	nu	nu	nu
Deervetch, birdsfoot. Lotus corniculatus								
-birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	nu	nu	nu	nu	nu	nu
Fescue, alta. Festuca arundinacea								
-alta, aerial part, fresh, (2)	2-01-889	23.9	nu	nu	nu	nu	nu	nu
Fescue, meadow. Festuca elatior								
-meadow, aerial part, fresh, (2)	2-01-920	28.6	nu	nu	nu	nu	nu	nu
Gamagrass, eastern. Tripsacum dactyloides								
-eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	nu	nu	nu	nu	nu	nu
Grama. Bouteloua spp								
-aerial part, fresh, midbloom, (2)	2-02-164	28.0	nu	nu	nu	nu	nu	nu
-aerial part, fresh, mature, (2)	2-02-166	63.4	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Kale. Brassica oleracea, acephala -aerial part, fresh, (2)	2-02-446	11.6	15	25	15	25	15	25
Lespedeza. Lespedeza spp -aerial part, fresh, early vegetative, (2)	2-02-539	31.1	nu	nu	nu	nu	nu	nu
Lettuce. Lactuca sativa -aerial part, fresh, (2)	2-02-624	5.3	5	25	5	25	5	25
Napiergrass. Pennisetum purpureum -aerial part, fresh, late vegetative, (2)	2-03-158	25.6	nu	nu	nu	nu	nu	nu
Orchardgrass. Dactylis glomerata -aerial part, fresh, early vegetative, (2)	2-03-440	23.9	nu	nu	nu	nu	nu	nu
Pricklypear. Opuntia spp -aerial part, fresh, (2)	2-01-061	16.8	nu	nu	nu	nu	nu	nu
Ryegrass, Italian. Lolium multiflorum -Italian, aerial part, fresh, (2)	2-04-073	21.4	nu	nu	nu	nu	nu	nu
Sage, black. Salvia mellifera -black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu	nu	nu	nu	nu	nu
Squirreltail. Sitanion spp -aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu	nu	nu	nu	nu
Timothy. Phleum pratense -aerial part, fresh, late vegetative, (2)	2-04-903	25.9	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Wheat. Triticum spp -aerial part, fresh, early vegetative, (2)	2-05-176	22.9	nu	nu	nu	nu	nu	nu
Wheatgrass. Agropyron spp -aerial part, fresh, mature, (2)	2-05-363	60.5	nu	nu	nu	nu	nu	nu
Wheatgrass, crested. Agropyron cristatum -crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

			Pullets (grower diet)		Laying hens		Broilers	
Feedstuff	International reference number	Dry matter	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Class 3 feeds (silages)								
Note: Silages are usually compared to dry forages even though they are a Class 1 feed.								
Alfalfa. Medicago sativa								
-aerial part, dehy, mn 20% protein, (1)	1-00-024	91.5	100	100	100	100	100	100
-aerial part, ensiled, (3)	3-00-212	27.3	nu	nu	nu	nu	nu	nu
Citrus, orange. Citrus sinensis								
-pulp, ensiled, (3)	3-01-250	11.3	nu	nu	nu	nu	nu	nu
Corn. Zea mays								
-aerial part, ensiled, (3) Corn fodder silage	3-02-822	23.7	nu	nu	nu	nu	nu	nu
-ears w husks, ensiled, (3)	3-02-839	43.4	nu	nu	nu	nu	nu	nu
Oats. Avena sativa								
-aerial part, ensiled, (3)	3-03-298	31.0	nu	nu	nu	nu	nu	nu
Pea. Pisum spp								
-aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	nu	nu	nu	nu	nu	nu
Pea vine silage								
-see pea, aerial part wo seeds, ensiled, (3)								
Sorghum. Sorghum vulgare								
-aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Sorghum, sorgo. Sorghum vulgare, saccharatum								
-sorgo, aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	nu	nu	nu	nu	nu	nu
Soybean. Glycine max								
-aerial part, ensiled, (3)	3-04-581	27.2	nu	nu	nu	nu	nu	nu
Timothy. Phleum pratense								
-aerial part, ensiled, (3)	3-04-922	33.5	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Class 4 energy feeds								
Corn. Zea mays, indentata -dent, yellow, grain, (4)	4-02-935	87.0	100	100	100	100	100	100
Almond. Prunus amygdalus -hulls, (4)	4-00-359	88.4	nu	nu	nu	nu	nu	nu
Apples. Malus spp -fruit, fresh, (4)	4-00-421	15.9	8	3	7	3	5	2
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	80	10	80	10	nu	nu
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	85	10	80	10	75	2
Apricots. Prunus armeniaca -fruit, fresh, (4)	4-20-438	14.6	nu	nu	nu	nu	nu	nu
-fruit wo pits, dehy, (4)	4-15-311	90.0	50	3	45	3	35	2
Artichoke. Cynera scolymus roots, fresh (4)	4-00-430	20.5	nu	nu	nu	nu	nu	nu
Avocado. Persea americana -fruit wo pits, grnd, (4)	4-15-312	91.4	50	3	45	3	35	2
Bakery -refuse, dehy, (4)	4-20-419	90.0	90	25	90	25	90	20
Banana. Musa spp -fruit, fresh, (4)	4-00-485	24.3	20	5	20	5	20	5
-peelings, dehy grnd, (4)	4-00-486	88.0	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

			Pullets (grower diet)		Laying hens		Broilers	
Feedstuff	International reference number	Dry matter	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Barley. Hordeum vulgare -grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material (4)	4-08-159	90.0	95	80	92	80	85	10
-grain screenings, (4)	4-00-542	88.9	nu	nu	nu	nu	nu	nu
Bean, lima. Phaseolus limensis -seeds, (4) Butter bean	4-15-317	90.0	85	10	80	10	75	10
Beet, mangels. Beta spp -roots, fresh, (4) Mangel, roots	4-00-637	13.2	nu	nu	nu	nu	nu	nu
Beet, sugar. Beta saccharifera -crowns, fresh, (4)	4-00-648	18.0	nu	nu	nu	nu	nu	nu
-root tips, (4)	4-20-436	19.2	nu	nu	nu	nu	nu	nu
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses Beet molasses (AAFCO)	4-00-668	79.1	60	8	60	8	60	5
Beet, sugar. Beta saccharifera -sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669		nu	nu	nu	nu	nu	nu
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.2	nu	nu	nu	nu	nu	nu
Bread, white -enriched, (4)	4-08-359	64.1	60	20	60	20	60	20

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Broccoli. Brassica oleracea, botrytis								
-aerial part, dehy, (4)	4-20-417	90.0	35	3	35	3	25	2
-stems, fresh, (4)	4-00-884	45.1	nu	nu	nu	nu	nu	nu
Brussel sprouts. Brassica oleracea gemmifera								
-heads, fresh, (4)	4-08-187	14.8	7	3	7	3	nu	nu
Buckwheat. Fagopyrum spp								
-grain, (4)	4-00-994	87.8	85	20	85	20	75	10
Burclover. Medicago, lispida								
-seeds, (4)	4-20-113	93.4	50	10	50	10	40	8
Cabbage. Brassica oleracea capitata								
-aerial part, fresh, (4)	4-01-046	9.4	5	3	5	3	3	2
-aerial part, dehy, (4)	4-15-314	88.3	30	3	30	3	20	2
-cannery residue, (4)	4-15-313	15.8	7	3	7	3	5	2
Carrott. Daucus spp								
-leaves, fresh, (4)	4-01-143	16.5	nu	nu	nu	nu	nu	nu
-pulp, wet grnd, (4)	4-15-315	14.0	7	3	7	3	5	2
-roots, dehy, (4)	4-20-148	11.9	6	3	5	3	4	2
-roots, fresh, (4)	4-01-145	11.9	7	3	7	3	5	2
Cattle. Bos spp								
-whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	100	3	100	3	110	3

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Cassava. *Manihot spp* -starch by-product, dehy, (4)	4-08-572	90.0	90	20	90	20	90	10
Cauliflower. *Brassica oleracea, botrytis* -heads, fresh, (4)	4-08-189	9.0	5	2	5	2	4	2
Celery. *Apium graveolens* -aerial part, fresh, (4)	4-01-195	5.9	3	2	2	2	2	2
-stalks, dehy, (4)	4-15-316	90.0	45	3	40	3	35	2
-stalks, fresh, (4)	4-01-197	6.3	3	2	3	2	2	2
Citrus. *Citrus spp* -pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	nu	nu	nu	nu	nu	nu
-syrup, mn 45% invert sugar mn 71 degrees brix, (4) Citrus molasses (AAFCO)	4-01-241	66.9	nu	nu	nu	nu	nu	nu
Citrus, grapefruit. *Citrus paradisi* -fruit, fresh, (4)	4-01-242	13.6	nu	nu	nu	nu	nu	nu
-pulp, shredded, wet, (4)	4-01-243	14.0	nu	nu	nu	nu	nu	nu
Citrus, lemon. *Citrus limon* -pulp, (4)	4-11-753	92.8	nu	nu	nu	nu	nu	nu
Citrus, orange. *Citrus sinensis* -fruit, fresh, cull, (4)	4-01-252	12.8	nu	nu	nu	nu	nu	nu
-cannery residue, dehy, (4)	4-15-318	90.6	nu	nu	nu	nu	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
-pulp, shredded wet, (4)	4-01-253	14.4	nu	nu	nu	nu	nu	nu
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	nu	nu	nu	nu	nu	nu
Corn. Zea mays								
-ears grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	60	15	50	10	nu	nu
-grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	100	80	100	80	100	70
Corn, dent yellow. Zea mays indentata								
-dent yellow, grain, (4)	4-02-935	87.0	100	100	100	100	100	100
Dates. Phoenix dactylifera								
-fruit, dehy, (4)	4-01-752	91.9	60	10	60	10	50	5
Emmer. Triticum dicoccum								
-grain, (4)	4-01-830	90.8	85	40	85	40	80	10
Fig, common. Ficus carica								
-fruit, dehy, (4)	4-01-955	76.0	45	20	40	20	35	5
Fish								
-oil, (7) Blended fish oil (CFA) Fish oil (AAFCO)	7-01-965	100.0*	220	2	210	1	230	2
Flax, common. Linum usitatissimum								
-common, seed screenings, (4)	4-02-056	91.4	nu	nu	nu	nu	nu	nu
Garbage.								
-hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	50	8	50	8	50	8
Grains.								
-screenings, mn 70% grain mx 5.5% ash, (4)	4-02-156	90.0	65	15	65	15	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet) Relative feeding value (kg for kg) compared to base feed	Pullets (grower diet) Maximum % base feed it can replace	Laying hens Relative feeding value (kg for kg) compared to base feed	Laying hens Maximum % base feed it can replace	Broilers Relative feeding value (kg for kg) compared to base feed	Broilers Maximum % base feed it can replace
			%	%	%	%	%	%
Grain screenings (AAFCO)								
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds, (4) Uncleaned screenings (CFA)	4-02-153	92.1	nu	nu	nu	nu	nu	nu
Grapes. Vitis spp								
-fruit, dehy, (4)	4-02-203	84.8	45	4	45	3	35	2
-fruit, dehy, cull, (4)	4-08-427	84.8	45	4	45	3	3	2
-fruit, fresh, (4)	4-02-204	18.1	10	3	9	3	6	2
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	45	4	40	4	30	2
-pulp, fresh, (4) Grape, marc, fresh	4-02-206	37.5	20	3	18	3	15	2
-raisin syrup by-product, (4)	4-08-428	89.4	70	8	70	8	70	5
-seeds, (4)	4-20-133	85.0	20	5	20	5	nu	nu
-seeds, dehy grnd, (4)	4-08-082	90.0	25	5	25	5	20	2
Ipilipil. Leucaena leucocephala								
-leaves, dehy grnd, (4)	4-20-446	91.0	30	5	25	5	20	3
Lettuce. Lactuca sativa								
-aerial part, dehy grnd, (4)	4-15-319	90.0	30	5	25	5	20	3
-refuse, dehy, (4)	4-15-320	90.0	30	5	25	5	20	3

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ıble 26 Feed substitution table for chickens

ıdstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
·lons, pie. Curcurbita spp -fruit w seeds, fresh, (4)	4-08-459	4.1	2	2	2	2	2	2
lasses -see Beet; see Sugarcane; see Citrus								
ctarine. Prunus persica nectarina -fruit, fresh, (4)	4-20-430	15.8*	nu	nu	nu	nu	nu	nu
k. Querus spp -acorns, (4)	4-07-755	70.7	50	10	50	10	nu	nu
ts. Avena sativa -grain, (4)	4-03-309	89.7	80	60	80	60	70	20
:s, wild. Avena fatua -wild, grain, (4)	4-03-394	91.0	40	10	35	10	nu	nu
.ves. Olea europaea -cannery residue, (4)	4-15-323	91.7	nu	nu	nu	nu	nu	nu
pulp, dehy, (4)	4-15-322	93.5	45	3	40	3	30	2
on. Allium spp seed screenings, (4)	4-15-324	89.1	30	5	nu	nu	nu	nu
snip. Pastinaca sativa roots, fresh, (4)	4-03-536	13.7	7	2	6	2	4	2
ches. Prunus persica fruit, fresh, (4)	4-20-432	13.1	nu	nu	nu	nu	nu	nu
fruit wo pits, dehy, (4)	4-13-452	90.0	50	3	45	3	35	2
rs. Pyrus spp fruit, fresh, (4)	4-03-660	17.3	10	3	9	3	6	2

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ble 26 Feed substitution table for chickens

dstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
ineapple. Ananas comosus								
-cannery residue, dehy, (4) Pineapple bran	4-03-722	88.6	25	10	25	5	nu	nu
lums. Prunus domestica								
-fruit, fresh, (4)	4-20-433	14.3	nu	nu	nu	nu	nu	nu
otato. Solanum tuberosum								
-Process residue, dehy, (4) Potato by-product, dried Potato pomace, dried Potato pulp, dried Potato waste, dried	4-03-775	88.4	90	15	90	15	90	10
-roots, baked dehy, (4)	4-20-153	86.4	85	15	85	15	85	10
-roots, cooked, (4)	4-03-784	24.3	nu	nu	nu	nu	nu	nu
-roots, dehy grnd, (4) Potato meal	4-07-850	91.1	90	15	90	15	90	10
-roots, fresh, (4)	4-03-787	22.8	nu	nu	nu	nu	nu	nu
runes. Prunus domestica								
-fruit, fresh, (4)	4-20-359	14.3	nu	nu	nu	nu	nu	nu
-fruit, dehy grnd, (4)	4-20-435	90.0	35	3	30	3	30	2
-fruit wo pits, dehy, (4)	4-20-434	90.0	50	5	50	5	40	3
Pumpkins. Cucurbita pepo								
-fruit, fresh, (4)	4-03-815	[illegible]	5	4	4	3	3	[illegible]
Rice. Oryza sativa								
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4)	4-03-928	90.8	40	10	40	10	nu	nu

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Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Rice bran (AAFCO								
-grain w hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	85	30	85	30	80	20
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	95	60	95	60	95	50
-polishings, dehy, (4) Rice polish Rice polishings (AAFCO)	4-03-943	90.2	90	30	90	30	90	15
Rutabagas. Brassica napobrassica -roots, fresh, (4)	4-04-001	11.4	5	3	4	3	3	2
Rye. Secale cereal -flour by-product coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2	nu	nu	nu	nu	nu	nu
-grain, (4)	4-04-047	88.8	70	8	70	5	nu	nu
Safflower. Carthamus tinctorius -seeds, (4)	4-07-958	92.7	90	5	90	5	70	3
Sorghum, feterita. Sorghum vulgare -grain, (4)	4-04-369	88.6	95	80	94	80	92	50
Sorghum, grain variety. Sorghum vulgare -grain, (4)	4-04-383	88.5	95	80	94	80	92	50
Sorghum, hegari. Sorghum vulgare -grain, (4)	4-04-398	89.0	95	80	94	80	92	50
Sorghum, Kafir. Sorghum vulgare, cafrorum -grain, (4)	4-04-428	89.2	95	80	94	80	92	50

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying-hens			
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Sorghum, kaoliang. Sorghum vulgare nervosum -grain, (4)	4-04-431	88.7	95	80	94	80	92	50
Sorghum, milo. Sorghum vulgare subglabrescens -milo, grain, (4)	4-04-444	89.0	95	80	94	80	92	50
Sugarcane. Saccharum officinarum -molasses, dehy, (4) Cane molasses, dried molasses, cane, dried	4-04-695	90.5	75	8	75	8	75	5
Sugarcane. Saccharum officinarum -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	65	8	65	8	65	5
Swine. Sus scrofa -lard, (4)	4-04-790	100.0*	230	5	230	5	230	8
Turnip. Brassica rapa -roots, fresh, (4)	4-05-067	9.6	4	3	4	3	3	2
Walnuts. Juglans spp -meats w shells, grnd, (4)	4-20-129	93.2	nu	nu	nu	nu	nu	nu
Watergrass. Hydrochloa caroliniensis -seeds, (4)	4-20-128	90.0						
Wheat. Triticum spp -bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	40	20	35	7	nu	nu
Wheat. Triticum spp -germ oil, (7) Wheat germ oil (AAFOC)	7-05-207	100.0	220	2	230	2	240	2
-grain, (4)	4-05-211	88.3	95	80	95	80	92	50
-grain, screenings, (4)	4-05-216	88.9	75	50	70	50	60	30
Whey. see Cattle								

Table 2b Feed substitution table for chickens

			Pullets (grower diet)		Laying hens		Broilers	
Feedstuff	International reference number	Dry matter	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Class 5 feeds (protein supplements)								
Soybean. Glycine max -seeds, solv extd grnd mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	100	100	100	100	100	100
Alfalfa. Medicago sativa -seed screenings, (5)	5-08-326	90.3	75	10	75	10	60	5
Animal -blood, dehy grnd (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	100	10	100	10	100	5
-carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	100	25	100	30	100	20
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCOO Digester tankage	5-00-386	92.6	nu	nu	nu	nu	nu	nu
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	100	25	100	30	100	20

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Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	120	8	120	8	120	5
Babassu. *Orbignya spp* -kernels, extn unspecified grnd, (5)	5-00-453	92.7	70	10	70	10	60	5
Barley. *Hordeum vulgare* -malt sprouts w hulls, dehy, mn 24% protein (5) Malt sprouts (AAFCO)	5-00-545	92.3	50	20	40	10	25	5
Bean, kidney. *Phaseolus vulgaris* -kidney, seeds, (5)	5-00-600	88.9	50	25	45	25	35	10
Bean, mung. *Phaseolus aureus* -seeds, (5)	5-08-185	90.0	50	25	45	25	35	10
Bean, navy. *Phaseolus vulgaris* -seeds, (5)	5-00-623	89.7	50	25	45	25	35	10
Blood. -see Animal								
Buckwheat. Fagopyrum spp -flour by-product wo hulls coarse sifted, mx 10% fiber, (5) Buckwheat middlings	5-00-991	88.7	50	25	45	10	25	5
Buttermilk. -see Cattle								
Carob bean. *Ceratonia siliqua* -seeds, (5)	5-09-306	81.2	50	20	45	10	25	5

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Castorbean. Ricinus communis								
-seeds, extn unspecified grnd, (5) (must be detoxified) Castorbean meal	5-20-420	90.0	50	20	50	20	30	5
Cattle. Bos spp								
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	25	10	25	10	20	5
-casein, milk acid precipitated dehy, mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	125	10	125	10	125	8
-cheese rind, (5)	5-01-163	82.8	100	20	100	20	100	10
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu	nu	nu	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	110	20	110	20	110	10
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	110	20	110	20	110	10

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu	nu	nu	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	125	10	125	10	125	8
-cottage cheese, (5)	5-08-001	21.0	25	5	25	5	25	5
Chicken. Gallus domesticus								
-gizzards, raw, (5)	5-07-948	25.0	nu	nu	nu	nu	nu	nu
-manure, dehy, (5)	5-20-423	90.0	25	10	20	10	15	5
Chicken, broiler. Gallus domesticus								
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	20	8	15	8	nu	nu
-manure w shavings added, dehy, (5)	5-20-425	91.0*	20	8	15	8	nu	nu
Clover, red. Trifolium pratense								
-red, seeds, (5)	5-08-004	87.9	nu	nu	nu	nu	nu	nu
-red, seed screenings, (5)	5-08-005	90.3	nu	nu	nu	nu	nu	nu
Coconut. Cocos nucifera								
-meats, mech extd grnd, (5) Coconut meal mechanical extracted (AAFCO) Copra meal, mechanical extracted (AAFCO)	5-01-572	92.8	60	50	60	50	50	20

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Corn. Zea mays								
-distillers grains, dehy, (5) Corn distillers dried grains (CFA) Corn distillers dried grains (AAFCO)	5-02-842	93.1	65	20	65	10	60	5
-germs wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	65	20	65	10	60	5
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	50	20	45	20	25	5
Cottage cheese. -see Cattle								
Cotton. Gossypium spp								
-seeds, grnd, (5)	5-01-608	92.7	nu	nu	nu	nu	nu	nu
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	80	35	75	15	75	20
Cowpea. Vigna spp								
-seeds, (5) Blackeye bean	5-01-661	89.0	50	25	45	25	35	10
Crab. Callinectes sapidus, cancer spp, Paralithodes camschatica								
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	75	25	75	25	75	10

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Fish -stickwater solubles, cooked dehy, mn 60% protein, (5) Dried fish solubles (AAFCO)	5-01-971	92.3	105	20	105	15	110	10
Fish, anchovy. Engraulis spp -anchovy, whole or cuttings, cooked mech extd dehy grnd, (5) Fish meal, anchovy	5-01-985	92.0	110	25	115	20	125	20
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family) -white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5) White fish meal (CFA) Fish, cod, meal Fish, cusk, meal Fish, haddock, meal Fish, hake, meal Fish, pollock, meal Fish, monkfish, meal Fish, skate, meal	5-02-025	91.0	110	25	115	20	125	20
Flax, common. Linum usitatissimum -seeds, (5)	5-02-502	90.8	45	10	40	10	30	5
-seeds, solv extd grnd, mx 10% fiber, (5) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO) Solvent extracted linseed meal (CFA)	5-02-048	89.9	65	10	65	10	60	10

Table 26 Feed substitution table for **chickens**

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Fly. Musca domestica								
-pupae, dehy grnd, (5)	5-20-422	90.0	100	20	100	15	100	10
Grains								
-distillers grains, dehy, (5)	5-02-144	92.6	50	20	45	10	25	5
Guar. Cyanopsis tetragonoloba								
-seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	80	35	80	35	75	20
Hemp. Cannabis sativa								
-seeds, (5)	5-20-136	91.1	50	20	45	10	25	5
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	45	20	40	10	25	5
Livers								
-see Animal; see Cattle								
Lobster. Homarus americanus								
-process residue, dehy grnd, (5)	5-02-635	90.0	75	25	75	25	75	10
Locust. Robinia spp.								
-seeds, (5)	5-20-429	90.8	80	35	80	35	75	20
Meat meal.								
-see Animal								
Meat meal tankage.								
-see Animal								
Mustard. Brassica spp								
-seeds, extn unspecified grnd, (5)	5-03-154	90.0	75	25	75	25	65	15
Palm. Elaeis spp								
-seeds, extn unspecified grnd, (5)	5-03-487	91.3	50	20	45	10	25	5

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Pea. Pisum spp								
-seeds, dehy, (5)	5-20-135	90.5	50	25	45	25	35	10
-seeds, grnd, (5)	5-03-598	89.1	50	25	45	25	35	10
Peanut. Arachis hypogaea								
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	88	50	88	40	85	15
-kernels w skins w hulls (5)	5-03-653	93.4	95	50	95	40	92	15
Poultry								
-feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5) Hydrolyzed poultry feathers (AAFCO) Feather meal	5-03-795	92.7	100	10	100	10	100	8
-viscera w feet w heads, dry or wet rendered dehy grnd, (5) Poultry by-product meal (CFA)	5-03-799	93.0	100	50	100	40	100	25
Rape. Brassica spp								
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	80	30	75	25	75	20

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Sweetclover, yellow. *Melilotus officinalis*								
-yellow, seed screenings, (5)	5-08-007	87.3	nu	nu	nu	nu	nu	nu
Tomato. *Lycopersicon esculentum*								
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	25	20	20	10	nu	nu
-pulp, wet, (5)	5-05-042	25.0	6	10	5	10	nu	nu
Wheat. *Triticum spp*								
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	50	20	50	20	40	10
Cattle. *Bos spp*								
-manure, dehy grnd, (7)	7-01-190	93.5	nu	nu	nu	nu	nu	nu
Rubbertree, para. *Hevea brasiliensis*								
-seeds, extn unspecified caked (5)	5-20-147	86.0	40	20	35	15	20	10
Rye. *Secale cereale*								
-distillers grains, dehy, (5) Rye distillers dried grains (AAFCO) Rye distillers dried grains (CFA)	5-04-023	93.0	40	20	35	10	20	5
Safflower. *Carthamus tinctorius*								
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7	30	25	30	20	nu	nu

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Sesame. Sesamum indicum								
-seeds, mech extd grnd, (5)	5-04-220	92.7	90	20	85	20	90	15
Silkworm.								
-pupae, dehy grnd, (5)	5-20-421	90.0	80	20	80	15	80	10
Shrimp.								
-process residue, dehy grnd, (5)	5-13-541	90.0	95	20	95	20	95	15
Sorghum, grain variety. Sorghum vulgare								
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	40	10	40	10	25	5
Soybean. Glycine max								
-seeds, (5) (Heat treated)	5-04-610	90.6	100	50	100	50	100	25
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	100	100	100	100	100	100
Spleens.								
-see Cattle								
Sunflower. Helianthus spp								
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340		55	20	50	20	40	15
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	93.0	85	35	85	35	80	20

Table 26 Feed substitution table for chickens

Feedstuff	International reference number	Dry matter	Pullets (grower diet)		Laying hens		Broilers	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%	%	%
Yeast, active. *Saccharomyces cerevisiae* -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	60	20	60	20	60	20
Yeast, brewers saccharomyces, *Saccharomyces cerevisiae* -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	115	10	115	10	115	5
Yeast, primary saccharomyces. *Saccharomyces cerevisiae* -primary saccharomyces, dehy, mn 40% protein (7)	7-05-533	92.9	115	10	115	10	115	5

Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Class 1 feeds (forages and roughages)					
Timothy, hay, s-c, early bloom, (1)	1-04-882	86.8	100	100	The preferred hay of horsemen.
Alfalfa, hay, s-c grnd, (1)	1-00-111	90.7	33.3	100	
Barley, hay, s-c, (1)	1-00-495	87.7	100	100	Lower value if not cut at the early dough stage
Brome, hay, s-c, (1)	1-00-890	91.4	100	100	
Canarygrass, reed, hay, s-c, (1)	1-01-104	88.8	90-95	100	
Clover, crimson, hay, s-c, (1)	1-01-328	88.9	125	100	Crimson clover hay has considerably lower value if not cut at an early stage.
Clover, red, hay, s-c, (1)	1-01-415	79.5	125	100	Clover hay should be well cured and free from dust and mold.
Clover-timothy, hay, s-c, (1)	1-01-487	88.5	110-115	100	Value of clover-timothy mixed hay depends on the proportion of clover present and the stage of maturity at which it is cut.
Corn, aerial part, s-c, mature, (1) Corn fodder, sun-cured, mature	1-02-772	68.1	100	50	Preferably fed along with a good legume hay. It is best to shred the fodder.
Corn, aerial part wo ears wo husks, s-c, (1) Corn stove, sun-cured	1-02-778	79.4	60	50	Preferably fed along with a good legume hay. It is best to shred the stover.
Cowpea, hay, s-c, (1)	1-01-645	90.4	110	100	
Grass-legume, hay, s-c, (1)	1-02-301	89.5	110-115	100	Value depends on the proportion of legume present and the stage of maturity at which it is cut.
Lespedeza, hay, s-c,(1)	1-02-522	91.7	115	100	
Oats, hay, s-c, (1)	1-03-280	90.7	100	100	Lower value if not cut at the early dough stage.

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Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Native plants, intermountain, hay, s-c, (1)	1-03-181	93.4	100	100	
Sorghum, grain variety, aerial part, s-c, (1) Grain, sorghum fodder, sun-cured	1-04-372	90.2	100	50	Preferably fed along with a good legume hay. It is best to shred the fodder.
Sorghum, Johnsongrass, hay s-c, (1)	1-04-407	90.5	90-95	100	
Sorghum, atlas, aerial part, wo heads, s-c, (1)	1-04-336	75.0	60	50	Preferably fed along with a good legume hay. It is best to shred the stover.
Sorghum, sudangrass, hay, s-c, (1)	1-04-480	89.8	90-95	100	
Soybean, hay, s-c, (1)	1-04-558	88.9	110	100	
Vetch-oats, hay, s-c, (1)	1-05-132	87.6	110-115	100	The higher the proportion of vetch, the higher the value.
Wheat, hay, s-c, (1)	1-05-172	86.4	100	100	

Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Class 3 feeds (silage)					
Timothy, hay, s-c, early bloom, (1), Note: Silages are usually compared to hays even though they are a class 1 feed.	1-04-882	86.8	100	100	The preferred hay of horsemen.
Alfalfa, aerial part, ensiled, (3)	3-00-212	28.3	45-55	33.3-50	
Corn, aerial part, ensiled, (3)	3-02-822	23.7	45-55	33.3-50	
Grass-legume, aerial part, ensiled, (3)	3-02-303	28.9	45-50	33.3-50	
Grass, aerial part, ensiled, (3)	3-02-221	27.9	40-45	33.3-50	
Sorghum, aerial part, ensiled, (3)	3-04-323	28.9	40-45	33.3-50	

Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Class 4, Energy feeds					
Oats, grain, (4)	4-03-309	89.7	100	100	The leading light horse feed. The feeding value of oats varies according to the test weight per bushel. Need not be ground.
Barley, grain, mx wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-156	90.0	110	100	Most horsemen feel that it is preferable to feed barley along with more bulky feeds; for example, 25% oats or 15% wheat bran. Crush for horses.
Beet, sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4)	4-00-668	79.1	80-95	20	
Beet, sugar, pulp dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	100	33.3	Not palatable to horses.
Beet, sugar, molasses, dehy, (4)	4-00-672	92.2	100	33.3	Not palatable to horses.
Carrot, roots, fresh, (4)	4-01-145	11.9	15-25	10	Horses are very fond of carrots.
Corn, grits by-product, mn 5% fat, (4)	4-02-887	8[illegible].8	115	100	
Rice, grain w hulls, (4) Rough rice Paddy rice	4-03-939	88.8	115	50	Grind for horses.
Rye, grain, (4)	4-04-047	88.2	115	33.3	Higher levels, or abrupt changes to rye, may cause digestive disturbances.
Sorghum, grain variety, grain, (4)	4-04-383	88.5	110-115	85	All varieties have about the same feeding value. Crush for horses.
Sugarcane, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4)	4-04-696	77.0	80-95	25	

Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Wheat, grain, (4)	4-05-211	88.3	115	20	Wheat should be mixed with a more bulky feed in order to prevent colic.
Wheat, bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	100	20	Valuable for horses because of its bulky nature and laxative properties.
Wheat, flour by-product mill run, mx 9.5% fiber, (4) Wheat mill run (AAFCO)	4-05-206	90.1	105	20	

Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Class 5 feeds (protein supplements)					
Flax, common, seeds, solv extd grnd, mx 10% fiber, (5) Solvent extracted linseed meal (CFA) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO)	5-02-048	89.9	100	100	Linseed meal is the preferred protein supplement for horses. It is valued because of its laxative properties and because of the sleek hair coat which it imparts.
Coconut, meats, extn unspecified grnd, (5)	5-01-570	88.2	90-100	50	
Corn, gluten w bran, wet milled dehy, (5) Corn, gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.4	70	100	
Corn, gluten, wet milled dehy, (5)	5-02-900	91.1	100	50	Somewhat unpalatable to horses.
Cotton, seeds w some hulls, prepress solv-exted grnd, 41% protein, (5)	5-07-872	91.0	100	100	Satisfactory if limited to amounts necessary to balance ordinary rations.
Grains, brewers grains, dehy, mx 3% dried spent hops, (5)	5-02-141	91.0	65-70	50	
Grains, distillers grains, dehy, (5)	5-02-144	92.6	90-100	25	
Grains, distillers solubles, dehy, (5) Dried distillers solubles (CFA)	5-02-147	92.1	90-100	25	
Pea, seeds, (5)	5-03-600	89.5	75	50	
Peanut, kernels, extn unspecified grnd, 39% protein, (5)	5-03-646	90.2	100	100	

Table 27 Feed substitution table for light horses

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Soybean, seeds, mech-extd grnd, mx 7% fiber, (5) Soybean meal, mechanical extracted (AAFCO) Soybean meal, expeller extracted Soybean meal, hydraulic extracted Soybean oil meal, expeller extracted Soybean oil meal, hydraulic extracted	5-04-600	90.7	100	100	
Soybean, seeds, (5)	5-04-610	90.6	100	100	Soybeans should be limited to one-third of the concentrate ration.

Table 28. Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Class 1 feeds (forages and roughages)					
Alfalfa, hay, s-c, early bloom, (1)	1-00-059	90.1	100	100	
Note: Silages are usually compared to hays even though they are a class 1 feed.					
Barley, hay, s-c, (1)	1-00-495	87.7	70	50	The beard may be harmful, especially to woolly faced sheep.
Beet, sugar, aerial part w crowns, s-c, (1)	1-00-666	89.3	70	50	
Brome, hay, s-c, (1)	1-00-890	91.4	75	100	
Canarygrass, reed, hay, s-c, (1)	1-01-104	88.8	70	100	
Clover, crimson, hay, s-c, (1)	1-01-328	88.9	90-100	100	Crimson clover hay has a considerably lower value if not cut at an early stage.
Clover, red, hay, s-c, (1)	1-01-415	79.5	90-100	100	If the rest of the ration is adequate in protein, clover hay will be equal to alfalfa in feeding value; otherwise, it will be lower.
Clover-timothy, hay, s-c, (1)	1-01-487	88.5	80-90	100	
Corn, aerial part, s-c, mature, (1)	1-02-772	68.1	75	100	Should be chopped.
Corn, aerial part wo ears wo husks, s-c, (1)	1-02-778	79.4	35	50	Unsatisfactory for finishing lambs, but cut or shredded stover may be used as a part of the roughage for breeding ewes if fed along with a good legume.
Cowpea, hay, s-c,	1-01-645	90.4	95-100	100	
Grass-legume, hay, s-c, (1)	1-02-301	89.5	80-90	100	Value depends on the proportion of legumes present and the stage of maturity at which it is cut.
Lespedeza, hay, s-c, (1)	1-02-522	91.7	80-100	100	Feeding value varies considerably with stage of maturity at which it is cut.

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Table 28 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds which it can replace for best results	Remarks
Mint, hay, s-c, (1)	1-03-124	87.5	80-95	75	
Native plants, intermountain hay, s-c, (1)	1-03-181	93.4	65-70	100	
Oats, hay, s-c, (1)	1-03-280	90.7	75	50	
Pea, hay, s-c, (1)	1-03-572	88.0	100-110	75	
Sorghum, grain variety, aerial part, s-c, (1) Grain, sorghum fodder, sun-cured	1-04-372	90.2	70	100	
Sorghum, Johnsongrass, hay, s-c, (1)	1-04-407	90.5	70	100	
Sorghum, atlas, aerial part, wo heads, s-c, (1) Sorghum, atlas, stover	1-04-336	75.0	35	50	Unsatisfactory for finishing lambs, but cut or shredded stover may be used as a part of the roughage for breeding ewes if fed along with a good legume.
Sorghum, sudangrass, hay, s-c, (1)	1-04-480	89.8	50-75	50	
Soybean, hay, s-c	1-04-558	88.9	85-100	100	The lower value is for finishing lambs. For other classes of sheep, it is equal of alfalfa hay.
Sweetclover, hay, s-c, (1)	1-04-754	91.3	100	100	Value of sweet clover hay varies widely. Second year sweet clover hay is less desirable than first year clover hay and is more apt to cause sweet clover disease.
Timothy, hay, s-c, (1)	1-08-893	88.6	70	50	
Vetch-oats, hay, s-c, (1)	1-05-132	87.6	80-90	100	The higher the proportion of vetch, the higher the value.
Wheat, hay, s-c, (1)	1-05-172	86.4	70	50	

Table 28 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 3 feeds (silage)					
Alfalfa, hay, s-c, early bloom, (1)	1-00-059	90.1	100	100	
Note: Silages are usually compared to hays even though they are a class 1 feed.					
Alfalfa, aerial part, ensiled, (3)	3-00-212	28.3	33.3-50	50-85	When alfalfa silage replaces corn silage, more energy feed must be provided but less protein, unless grain is used as a preservative.
Beet, sugar, aerial part w crowns, ensiled, (3)	3-00-660	24.8	17-25	33.3-50	Either provide some dry forage or feed 2 oz. of finely ground limestone to each 100 lbs. of silage.
Corn, aerial part, ensiled, (3)	3-02-822	23.7	33.3-50	50-85	Although a ration in which corn silage is the only forage is sometimes fed to sheep, most feeders prefer to limit the silage and use some hay.
Grass-legume, aerial part, ensiled, (3)	3-02-303	28.9	32-45	50-85	Although a ration in which grass silage is the only forage is sometimes fed to sheep, most feeders prefer to limit the silage and use some hay.
Grass, aerial part, ensiled, (3)	3-02-221	27.9	30-45	50-85	
Pea, aerial part wo seeds, ensiled, (3)	3-03-596	24.5	33.3-50	50-85	Unless grain is added as a preservative, pea-vine silage requires more energy feed, but less protein supplement than corn silage when fed to fattening lambs.
Sorghum, aerial part, ensiled, (3)	3-04-323	28.9	32-47	50-85	Although a ration in which sorghum silage is the only forage is sometimes fed to sheep most feeders prefer to limit the silage and use some hay.

Table 28 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Sorghum, sorgo, aerial part, ensiled, (3)	3-04-468	28.0	25-30	50-85	Nearly equal to grain varieties in value per acre because of greater yield.

Table 28 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 4, energy feeds					
Corn, dent, gr 2 US mn wt 54 lb per bushel, (4)	4-02-915	85.4	100	100	Grinding not necessary unless (1) for old ewes with poor teeth, (2) for lambs under 5-6 wks., (3) for incorporation in a mixed ration.
Apples, pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	82-86	33.3	
Barley, grain, mx wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-156	90.0	85-100	100	It does not pay to grind barley for sheep.
Beet, mangles, roots, (4)	4-00-637	13.8	25-35	50	Some sheepmen believe that the feeding of high levels of roots over a long period will produce urinary calculi. Therefore, caution should be exercised in feeding them to rams and wethers (females not affected. Many shepherds add roots to the ration of show sheep, for conditioning purposes.
Beet, sugar, pulp dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.7	95	33.3-50	Value of about 80% when used as the only concentrate for finishing lambs.
Beet, sugar, molasses, dehy, (4)	4-00-672	92.2	95	33.3-50	Value of about 80% when used as the only concentrate for finishing lambs.
Beet, sugar, pulp, wet, (4)	4-00-671	11.4	25	33.3-50	
Beet, sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4)	4-00-668	79.1	80-90	20	Actual value may be higher as an appetizer
Citrus, pulp wo fines, shredded dehy, (4)	4-01-237	90.2	95	25-33.3-50	
Citrus, syrup, mn 45% invert sugar mn 71 degrees brix, (4) Citrus molasses (AAFCO)	4-01-241	66.9	80-90	20	

Table 23 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	remarks
Corn, grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (CAAFCO)	4-02-887	89.8	100	100	
Oats, grain, grnd, (4)	4-08-471	89.8	75-100	10-100	Lower value when used as the only grain for finishing lambs. Highest value for young lambs, for breeding animals and for starting lambs on feed. Need not be ground for sheep. Should not constitute more than one-third of finishing rations. Feeding value varies according to the test weight per bushel.
Potatoes, roots, fresh, (4)	4-03-787	22.8	25-35	85	Contrary to popular belief, potatoes can be fed successfully through the pregnancy and lactation periods.
Rice, grain w hulls, (4) Rough rice Paddy rice	4-03-939	88.8	55-75	100	
Rice, bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4)	4-03-928	90.7	66.7-75	33.3	
Rice, polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	85-90	25	
Rye, grain, (4)	4-04-047	88.2	83-87	50-100	Apparently rye is more palatable to sheep than to other classes of animals. Rye may be fed whole to sheep.
Sorghum, milo, grain, (4)	4-04-444	88.9	100	100	All varieties have about the same feeding value. There is no advantage in grinding sorghum for sheep.

Table 28 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Sugarcane, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.0	80-90	25	
Wheat, bran, dry milled, (4) Bran (CAF) Wheat bran (AAFCO)	4-05-190	89.5	90	10-33.3	Because of its bulk and fiber, wheat bran should not constitute more than 10-15% of a finishing ration. Bran is valuable for young animals, for breeding animals, and for starting animals on feed.
Wheat, flour by-product mill run, mx 9.5% fiber, (4)	4-05-206	90.1	95	33.3	Can be used in about the same way and in the same quantities as wheat bran for sheep.
Wheat, grain, (4)	4-05-211	88.3	90-95	100	May be fed as the only grain, but it is improved by mixing with another grain. Wheat may be fed whole. Wheat-fed sheep appear to be especially susceptible to founder.

Table 28 Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 5 feeds (protein supplements)					
Soybean, seeds, solv extd grnd mx 7% fiber, (5)	5-04-604	89.1	100	100	
Alfalfa, seed screenings, (5)	5-08-326	90.3	70-75	50	Grind finely to destroy weed seeds.
Clover, seed screenings, (5)	5-01-289	88.1	70-75	50	Grind finely to destroy weed seeds.
Coconut, meats, extn unspecified grnd, (5) Coconut meal (CFA) Copra meal (CFA)	5-01-570	88.2	90-100	50	
Corn, gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA Corn gluten feed (AAFCO)	5-02-903	90.4	60-70	50-100	
Corn, gluten, wet milled dehy, (5)	5-02-900	91.1	100	50	
Cotton, seeds w some hulls, prepress solv-extd grnd, 41% protein, (5)	5-07-872	91.0	100	100	Unlike the situation with finishing cattle, cottonseed mean is about equal to linseed meal for finishing lambs. High levels of "cottonseed meal injury" unless feeds high in carotene are also fed.
Flax, seeds, grnd, commercial, (5)	5-02-042	95.7	100	100	
Grains, brewers grains, dehy, mx 3% dried spent hops, (5) Brewers dried grains (CFA) Brewers dried grains (AAFCO)	5-02-141	91.0	75	100	
Grains, distillers grains, dehy, (5)	5-02-144	92.6	90	100	Rye distillers' dried grains are about 10% lower in protein than similar products made from corn or wheat.
Grains, distillers, solubles, dehy, (5) Dried distillers solubles (CFA)	5-02-147	92.1	90	100	

Table 28 | Feed substitution table for sheep

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Pea, seeds, (5)	5-03-600	89.5	65-75	50	
Peanut, kernels, extn unspecified grnd, 39% protein, (5)	5-03-646	90.2	100	100	
Safflower, seeds, extn unspecified grnd (5)	5-04-108	92.2	40-45	100	
Soybean, seeds, (5)	5-04-610	90.6	95-100	100	It does not pay to grind soybeans for sheep.

Table 29 Feed substitution table for swine

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 4, energy feeds					
Corn, dent, gr 2 US mn wt 54 lb per bushel, (4)	4-02-915	85.4	100	100	Corn is the leading U.S. swine feed, about 50% of the total production being fed to hogs. It does not pay to grind corn for growing-finishing pigs, but it should be ground for older hogs..
Animal, fat, hydrolyzed, feed gr mn 85% fatty acids mx 6% unsponifiable matter mx 1% insoluble matter, (4)	4-00-376	100	241	5	
Barley, grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material, (4)	4-08-156	90.0	90	100	Of variable feeding value due to wide spread in test wt./bu. Should be ground. In Canada, where high quality bacon is produced, barley is considered preferable to corn for finishing hogs.
Beet, sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses (CFA) Beet molasses (AAFCO)	4-00-668	79.1	60-70	5	
Carrot, roots, fresh, (4)	4-01-145	11.9	12-20	25	
Casava, roots, dehy grnd, (4)	4-01-152	90.9	85	33.3	
Cattle, whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	100	5	
Cattle, whey, (4)	4-08-314	6.9	30	50	Worth 1/2 as much as skim milk.
Citrus, syrup, mn 45% invert sugar mn 71 degrees brix, (4) Citrus molasses (AAFCO)	4-01-241	66.9	70-75	10-20	It takes pigs 5 to 7 days to get used to the bitter taste of citrus molasses.

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Table 29 Feed substitution table for swine

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Corn, grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	95	50	Hominy feed will produce soff pork if it consitutes more than one-half the grain ration.
Millet, poroso, grain, (4)	4-03-120	90.0	85-90	50	
Oats, grain, grnd, (4)	4-08-471	89.8	80	33.3	For growing-finishing pigs, oats is equal to corn when limited to one-third of the ratio.
Oats, grain, rolled, (4)	4-03-307	90.7	107	100	In Canada, where high quality bacon is produced, oats is sometimes used to finish hogs in order to obtain a lean carcass. The feeding value of oats varies according to the test weight per bushel. Grind for swine.
Potatoes, roots, fresh, (4)	4-03-787	22.8	25-28	25-50	Not palatable in raw state; must be cooked.
Potatoes, roots, dehy grnd, (4)	4-07-850	91.1	100	33.3	
Rice, grain w hulls, (4) Rough rice Paddy rice	4-03-939	88.8	80-85	50	Rice should be ground.
Rice, bran w germ, dry milled, mx 13% faiber calcium carbonate declared above 3% mn, (4)	4-03-928	90.7	100	33.3	If more than one-third of the grain consists of rice bran, soft pork will result.
Rice, polishings, dehy, (4) Rice polish (CFA) Rice polishings (AAFCO)	4-03-943	90.2	100-120	33.3	Limited because feed becomes rancid in storage and soft pork will be produced.
Rye, grain, (4)	4-04-047	88.2	90	20	Should be limited because it is unpalatable. Grind for swine.

Table 29 Feed substitution table for swine

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Sorghum, milo, grain, (4)	4-04-444	88.9	90	100	All varieties have about the same feeding value. Grind when hand fed.
Sunflower, seeds, (4)	4-08-530	93.6	100	50	
Sweetpotato, roots, fresh, (4)	4-04-788	30.6	20-25	33.3-50	Cooking also improves the feeding value of sweet potatoes.
Sweetpotato, roots, dehy grnd, (4)	4-08-536	90.2	90	33.3	
Wheat, grain, (4)	4-05-211	88.3	100-105	100	Feed whole if self-fed; grind if hand-fed.
Wheat, bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	75	15-25	Bran is particularly valuable at farrowing time. In Canada, where high-quality bacon is produced, 15 to 25% wheat bran is sometimes incorporated in the finishing ration in order to obtain a lean carcass.
Wheat, flour by-product, fine sifted, mx 4% fiber, (4) Wheat red dog, mx 4% fiber (AAFCO) Middlings, mx 4.5% fiber (CFA)	4-05-203	88.2	103	20	
Wheat, flour by-product, mx 9.5% fiber, (4) Wheat middlings (AAFCO) Wheat standard middlings	4-05-205	88.9	85-100	25-50	
Wheat, flour by-product, coarse sift, mx 7% fiber, (4) Wheat shorts, mx 7% fiber (AAFCO) Shorts, mx 8% fiber (CFA)	4-05-201	87.1	115-120	25	

Table 29 Feed substitution table for swine

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Class 5 feeds (protein supplements)					In general, animal proteins should comprise part of the total protein supplement of swine, especially in dry-lot and for young pigs and gestating-lactating sows; they may comprise more if they are a cheaper protein source than plant proteins. Plant proteins may comprise as much as 90% of the protein supplement, provided the ration is adequately fortified with vitamins and minerals.
Animal, carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCO) Digester tankage	5-00-386	93.7	100	100	
Animal, carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.1	95-100	100	
Animal, carcass residue, dry rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5)	5-00-385	92.1	100	100	
Barley, malt sprouts w hulls, dehy, mn 24% protein (5)	5-00-546	91.9	100	10	Malt sprouts contain a growth factor(s). They result in increased feed intake and gain.
Bean, navy, seeds, (5)	5-00-623	89.7	90	66.7	Cook thoroughly; supplement with animal protein.
Cattle, buttermilk, dehy, feed gr mx 8% moisture mx 13% ash mn 5% fat, (5) Dried buttermilk, feed grade (AAFCO) Buttermilk, dried	5-01-160	92.1	90-105	100	

Table 23 Feed substitution table for swine

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Cattle, buttermilk, cultured, (5)	5-08-188	9.5	15	100	Pound for pound, worth one-tenth as much as dried buttermilk.
Cattle, buttermilk, condensed, mn 27% total solids w mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk, (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.2	33.3-50	100	Pound for pound, worth one-third as much as dried buttermilk.
Cattle, milk, skimmed dehy, mx 8% moisture (5) Dried skimmed milk, feed grade (AAFCO) Skimmilk, dried	5-01-175	93.3	90-120	100	In limited amounts, more valuable than tankage for young pigs.
Cattle, milk, skimmed, (5)	5-01-169	9.8	15	100	Pound for pound, worth 1/10 as much as dried skim milk.
Coconut, meats, extn unspecified grnd, (5)	5-01-570	88.2	50	25	
Corn, gluten, wet milled dehy, (5) Corn gluten meal (CFA) Corn gluten meal (AAFCO)	5-02-900	91.1	50-75	50	
Cotton, seeds w some hulls, pre-press solv-extd grnd, 41 % protein, (5)	5-07-872	91.0	50-75	33.3	Except where the new screw-processed cottonseed meal is used, high levels may produce gossypol poisoning and the level of cottonseed meal in swine rations should never exceed 8 to 9% of the total ration.
Fish, whole or cuttings, cooked mech-extd dehy grnd, 60% protein, (5)	5-01-981	90.4	105-110	100	
Flax, seeds, grnd, commercial, (5) Flaxseed meal (CFA) Ground flaxseed (CFA)	5-02-042	95.7	50-75	25-50	

Table 29 Feed substitution table for swine

Feedstuff	International reference number	Dry matter (%)	Relative feeding value (kg for kg) in comparison with the designated (underlined) base feed which = 100	Maximum percentage of base feed (or comparable feed or feeds) which it can replace for best results	Remarks
Peanut, kernels, extn unspecified grnd, 39% protein, (5)	5-03-646	90.2	75-80	50	Becomes rancid when stored too long. High levels may produce soft pork.
Peanut, kernels w skins w hulls, (5)	5-03-653	93.1	60-70	50	Peanuts are usually fed by hogging-off.
Pea, seeds, (5)	5-03-600	89.5	50	50	
Shrimp, process residue, dehy grnd, salt declared above 3% mx 7%, (5) Shrimp meal (AAFCO)	5-04-226	89.9	90-100	50	
Soybean, seeds, mech-extd grnd, mx 7% fiber, (5) Soybean meal, mechanical extracted (AAFCO) Soybean meal, expeller extracted Soybean meal, hydraulic extracted Soybean oil meal, hydraulic extracted	5-04-600	90.7	75-85	50	Soybean meal is of better quality than the other protein-rich plant protein supplements.
Soybean, seeds, (5)	5-04-610	90.6	70-75	50	

Turkeys do not utilize fruits with pits. Castorbeans need to be detoxified. Beans, peas and soybeans need to be heat treated. Wet materials are seldom used by poultry. The value of Alfalfa, hay, s-c, depends on the amounts of fiber and carotene content.

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter %	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed %	Young and finishing turkeys: Maximum % base feed it can replace %	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed %	Hens and toms (breeder diets): Maximum % base feed it can replace %
Class 1 feeds (forages and roughages)						
Alfalfa. Medicago sativa						
-aerial part, dehy, mn 20% protein, (1)	1-00-024	91.5	100	100	100	100
-aerial part, dehy, early vegetative, (1)	1-00-041	91.6	100	100	100	100
-hay, s-c, early bloom, (1)	1-00-059	90.1	90	100	90	100
-hay, s-c grnd, (1) Suncured alfalfa meal (AAFCO) Ground alfalfa hay (AAFCO)	1-00-111	91.3	90	100	70	100
Barley, Hordeum vulgare						
-hay, s-c, (1)	1-00-495	88.5	nu	nu	nu	nu
-straw, (1)	1-00-498	91.7	nu	nu	nu	nu
Bean. Phaseolus spp						
-aerial part wo seeds, s-c grnd, (1)	1-20-151	90.0	nu	nu	nu	nu
-straw, (1)	1-00-585	88.4	nu	nu	nu	nu
Beet, common. Beta vulgaris						
-leaves, dehy, (1)	1-20-418	90.0	90	100	90	100
Beet, sugar. Beta saccharifera						
-sugar, hulls, (1)	1-00-643	85.3	nu	nu	nu	nu
-sugar, straw, (1)	1-00-644	81.6	nu	nu	nu	nu
Bermudagrass. Cynodon dactylon						
-hay, s-c, (1)	1-00-703	90.9	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Bermudagrass, coastal. Cynodon dactylon						
-coastal, hay, s-c, (1)	1-00-716	91.0	nu	nu	nu	nu
Clover, alsike. Trifolium hybridum -alsike hay, s-c, (1)	1-01-313	87.7	nu	nu	nu	nu
Clover, crimson. Trifolium incarnatum						
-crimson, hay, s-c, (1)	1-01-328	88.9	nu	nu	nu	nu
Clover, ladino. Trifolium repens -ladino, hay, s-c, (1)	1-01-378	89.5	nu	nu	nu	nu
Clover, red. Trifolium pratense -red, hay, s-c, (1)	1-01-415	79.5	nu	nu	nu	nu
Coffee. Coffea spp -hulls, (1)	1-11-479	90.0	nu	nu	nu	nu
Corn. Zea mays						
-aerial part, s-c, mature, (1) corn fodder, sun-cured mature	1-02-772	68.1	nu	nu	nu	nu
-aerial part wo ears wo husks, s-c, mature, (1) corn stover, sun-cured, mature	1-02-776	85.6	nu	nu	nu	nu
-cobs, grnd, (1) Ground corn cob (AAFCO)	1-02-782	89.8	nu	nu	nu	nu
Cotton. Gossypium spp -bolls, s-c, (1)	1-01-596	91.8	nu	nu	nu	nu
-gin by-product, (1) cotton gin trash	1-08-413	90.3	nu	nu	nu	nu
-hulls, (1) Cottonseed hulls (AAFCO)	1-01-599	90.8	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
-hulls wo lint (1) cottonseed hull bran	1-01-600	90.9	nu	nu	nu	nu
Cowpea. *Vigna spp* -hay, s-c, (1)	1-01-645	90.4	nu	nu	nu	nu
Deervetch, birdsfoot. *Lotus corniculatus* -birdsfoot, hay, s-c, (1)	1-05-044	89.7	nu	nu	nu	nu
Fescue, meadow. *Festuca elatior* -meadow, hay, s-c, (1)	1-01-912	87.0	nu	nu	nu	nu
Flax, common. *Linum usitatissimum* -common, fiber by-product, mn 9% protein mx 35% fiber, (1)	1-02-036	91.6	nu	nu	nu	nu
-hulls, (1)	1-02-037	92.0	nu	nu	nu	nu
Gammagrass, Florida. *Tripsacum floridanum* -Florida, hay, s-c, (1)	1-02-087	92.3	nu	nu	nu	nu
Hops. *Humulus spp* -spent dehy, (1) Dried spent hops (AAFCO)	1-02-396	93.3	nu	nu	nu	nu
Lespedeza. *Lespedeza spp* -hay, s-c, midbloom, (1)	1-02-511	94.1	nu	nu	nu	nu
Mesquite. *Prosopis spp* -seeds w pods, s c, (1)	1-15-321	91.5	nu	nu	nu	nu
Oats. *Avena sativa* -hay, s-c, (1)	1-03-280	90.5	nu	nu	nu	nu
-hulls, (1) Oat hulls (CFA) Oat hulls (AAFCO)	1-03-281	92.2	nu	nu	nu	nu
-straw, (1)	1-03-283	92.1	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Onion. Allium spp -refuse, dehy, (1)	1-15-325	89.4	25	50	25	50
Orchardgrass. Dactylis glomerata -hay, s-c, (1)	1-03-438	88.7	nu	nu	nu	nu
Pea. Pisum spp -split pea by-product, grnd, (1) Pea feed Pea meal	1-08-478	89.5	80	50	80	50
-straw, (1)	1-03-577	84.7	nu	nu	nu	nu
Peanut. Arachis hypogaea -hulls, grnd, (1)	1-03-629	94.4	nu	nu	nu	nu
Pecan. Carya illinoinsis -shells, grnd, (1)	1-20-428	86.0*	nu	nu	nu	nu
Ramie. Boehmeria nivea -leaves, dehy grnd, (1)	1-03-857	90.0	90	50	90	50
Rye. Secale cereale -straw, (1)	1-04-007	91.0	nu	nu	nu	nu
Seaweed, kelp. Laminariales (order) Fucales (order) -whole, dehy grnd, (1)	1-20-424	91.3	75	50	75	50
Sorghum, grain variety. Sorghum vulgare -grain variety, aerial part, s-c, (1) Grain sorghum fodder, sun-cured	1-04-372	90.2	nu	nu	nu	nu
Sorghum, Johnsongrass. Sorghum halepense -Johnsongrass, hay, s-c, (1)	1-04-407	90.5	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Soybean. Glycine max						
-hay, s-c, (1)	1-04-558	88.9	nu	nu	nu	nu
-hulls, (1) Soybean hulls (AAFCO)	1-04-560	91.6	nu	nu	nu	nu
-straw, (1) Soybran flakes	1-04-567	87.7	nu	nu	nu	nu
Timothy. Phleum pratense						
-hay, s-c, late vegetative, (1)	1-04-881	87.0	nu	nu	nu	nu
Vetch. Vicia spp						
-hay, s c, (1)	1-05-106	88.2	nu	nu	nu	nu
Wheat. Triticum spp						
-hay, s-c, (1)	1-05-172	89.7	nu	nu	nu	nu
-straw, (1)	1-05-175	90.9	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Class 2 feeds (pasture, range, plants, and forages fed green)						
Alfalfa. Medicago sativa -aerial part, dehy, mn 20% protein, (1)	1-00-024	91.5	100	100	100	100
-aerial part, fresh, late vegetative, (2)	2 00-181	20.7	nu	nu	nu	nu
Asparagus. Asparagus officinalis -stem butts, fresh, (2)	2-00-436	91.0	40	50	45	50
Bean. Phaseolus spp -cannery residue, fresh, (2)	2-00-587	9.4	10	25	10	25
Beet, sugar. Beta saccharifera -sugar, aerial part w crowns, fresh, (2)	2-00-649	17.0	nu	nu	nu	nu
Bermudagrass. Cynodon dactylon -aerial part, fresh, (2)	2-00-712	28.9	nu	nu	nu	nu
Bluegrass, Kentucky. Poa pratensis -Kentucky, aerial part, fresh, early vegetative, (2)	2-00-778	30.5	30	100	30	100
Bluestem. Andropogon spp -aerial part, fresh, early vegetative, (2)	2-00-821	26.8	nu	nu	nu	nu
Brome, cheatgrass. Bromus tectorum -cheatgrass, aerial part, fresh, early vegetative, (2)	2-00-908	28.7	nu	nu	nu	nu
Brome, smooth. Bromus inermis -smooth, aerial part, fresh, early vegetative, (2)	2-00-956	28.8	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Buffalograss. *Buchloe dactyloides* -aerial part, fresh, (2)	2-01-046	9.4	nu	nu	nu	nu
Clover, alsike. *Trifolium hybridum* -alsike, aerial part, fresh, (2)	2-01-316	22.4	nu	nu	nu	nu
Clover, crimson. *Trifolium incarnatum* -crimson, aerial part, fresh, (2)	2-01-336	17.6	nu	nu	nu	nu
Clover, ladino. *Trifolium repens* -ladino, aerial part, fresh, (2)	2-01-383	17.7	nu	nu	nu	nu
Clover, red. *Trifolium pratense* -red, aerial part, fresh, early bloom, (2)	2-01-428	19.7	nu	nu	nu	nu
Deervetch, birdsfoot. *Lotus corniculatus* -birdsfoot, aerial part, fresh, (2)	2-07-998	25.0	nu	nu	nu	nu
Fescue, alta. *Festuca arundinacea* -alta, aerial part, fresh, (2)	2-01-889	23.9	nu	nu	nu	nu
Fescue, meadow. *Festuca elatior* -meadow, aerial part, fresh, (2)	2-01-920	28.6	nu	nu	nu	nu
Gamagrass, eastern. *Tripsacum dactyloides* -eastern, aerial part, fresh, full bloom, (2)	2-02-084	30.0*	nu	nu	nu	nu
Grama. *Bouteloua spp* -aerial part, fresh, midbloom, (2)	2-02-164	28.0	nu	nu	nu	nu
-aerial part, fresh, mature, (2)	2-02-166	63.4	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Kale. Brassica oleracea, acephala -aerial part, fresh, (2)	2-02-446	11.6	15	25	15	25
Lespedeza. Lespedeza spp -aerial part, fresh, early vegetative, (2)	2-02-539	31.1	nu	nu	nu	nu
Lettuce. Lactuca sativa -aerial part, fresh, (2)	2-02-624	5.3	5	25	5	25
Napiergrass. Pennisetum purpureum -aerial part, fresh, late vegetative, (2)	2-03-158	25.6	nu	nu	nu	nu
Orchardgrass. Dactylis glomerata -aerial part, fresh, early vegetative, (2)	2-03-440	23.9	nu	nu	nu	nu
Pricklypear. Opuntia spp -aerial part, fresh, (2)	2-01-061	16.8	nu	nu	nu	nu
Ryegrass, Italian. Lolium multiflorum -Italian, aerial part, fresh, (2)	2-04-073	21.4	nu	nu	nu	nu
Sage, black. Salvia mellifera -black, browse, fresh, stem cured, (2)	2-05-564	52.0*	nu	nu	nu	nu
Squirreltail. Sitanion spp -aerial part, fresh, stem cured, (2)	2-05-566	80.0*	nu	nu	nu	nu
Timothy. Phleum pratense -aerial part, fresh, late vegetative, (2)	2-04-903	25.9	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Wheat. *Triticum spp* -aerial part, fresh, early vegetative, (2)	2-05-176	22.9	nu	nu	nu	nu
Wheatgrass. *Agropyron spp* -aerial part, fresh, mature, (2)	2-05-363	60.5	nu	nu	nu	nu
Wheatgrass, crested. *Agropyron cristatum* -crested, aerial part, fresh, early vegetative, (2)	2-05-420	27.0	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

			Young and finishing turkeys		Hens and toms (breeder diets)	
Feedstuff	International reference number	Dry matter	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Class 3 feeds (silages)						
Note: Silages are usually compared to dry forages even though they are a Class 1 feed.						
Alfalfa. Medicago sativa -aerial part, dehy, mn 20% protein, (1)	1-00-024	91.5	100	100	100	100
-aerial part, ensiled, (3)	3-00-212	27.3	nu	nu	nu	nu
Citrus, orange. Citrus sinensis -pulp, ensiled, (3)	3-01-250	11.3	nu	nu	nu	nu
Corn. Zea mays -aerial part, ensiled, (3) Corn fodder silage	3-02-822	23.7	nu	nu	nu	nu
-ears w husks, ensiled, (3)	3-02-839	43.4	nu	nu	nu	nu
Oats. Avena sativa -aerial part, ensiled, (3)	3-03-298	31.0	nu	nu	nu	nu
Pea. Pisum spp -aerial part wo seeds, ensiled, (3) Pea vine silage	3-03-596	24.5	nu	nu	nu	nu
Pea vine silage -see pea, aerial part wo seeds, ensiled, (3)						
Sorghum. Sorghum vulgare -aerial part, ensiled, (3) Sorghum fodder silage	3-04-323	28.9	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Sorghum, sorgo. Sorghum vulgare, saccharatum						
-sorgo, aerial part, ensiled, (3) Sorghum, sorgo, fodder silage	3-04-468	28.0	nu	nu	nu	nu
Soybean. Glycine max						
-aerial part, ensiled, (3)	3-04-581	27.2	nu	nu	nu	nu
Timothy. Phleum pratense						
-aerial part, ensiled, (3)	3-04-922	33.5	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Class 4 energy feeds						
Corn. Zea mays, indentata						
-dent, yellow, grain, (4)	4-02-935	87.0	100	100	100	100
Almond. Prunus amygdalus						
-hulls, (4)	4-00-359	88.4	nu	nu	nu	nu
Apples. Malus spp						
-fruit, fresh, (4)	4-00-421	15.9	7	3	8	3
-pulp, dehy grnd, (4) Dried apple pomace (AAFCO)	4-00-423	89.4	85	10	85	10
-pulp wo seeds wo skins, dehy, (4)	4-15-302	87.5	85	10	85	10
Apricots. Prunus armeniaca						
-fruit, fresh, (4)	4-20-438	14.6	nu	nu	nu	nu
-fruit wo pits, dehy, (4)	4-15-311	90.0	50	3	55	3
Artichoke. Cynera scolymus						
roots, fresh (4)	4-00-430	20.5	nu	nu	nu	nu
Avocado. Persea americana						
-fruit wo pits, grnd, (4)	4-15-312	91.4	50	3	55	3
Bakery						
-refuse, dehy, (4)	4-20-419	90.0	90	25	90	25
Banana. Musa spp						
-fruit, fresh, (4)	4-00-485	24.3	20	5	20	5
-peelings, dehy grnd, (4)	4-00-486	88.0	nu	nu	nu	nu

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Barley. Hordeum vulgare -grain, mn wt 48 lb per bushel mn 10% mx 20% foreign material (4)	4-08-159	90.0	90	50	95	50
-grain screenings, (4)	4-00-542	88.9	nu	nu	nu	nu
Bean, lima. Phaseolus limensis -seeds, (4) Butter bean	4-15-317	90.0	75	10	80	10
Beet, mangels. Beta spp -roots, fresh, (4) Mangel, roots	4-00-637	13.2	nu	uu	nu	nu
Beet, sugar. Beta saccharifera -crowns, fresh, (4)	4-00-648	18.0	nu	nu	nu	nu
-root tips, (4)	4-20-436	19.2	nu	nu	nu	nu
-sugar, molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Molasses Beet molasses (AAFCO)	4-00-668	79.1	60	6	60	6
Beet, sugar. Beta saccharifera -sugar, pulp, dehy, (4) Dried beet pulp (CFA) Dried beet pulp (AAFCO)	4-00-669	90.6	nu	nu	nu	nu
-sugar, pulp w molasses, dehy, (4)	4-00-672	92.[illegible]	nu	nu	nu	nu
Bread, white -enriched, (4)	4-08-359	64.[illegible]	60	25	60	25

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Broccoli. Brassica oleracea, botrytis						
-aerial part, dehy, (4)	4-20-417	90.0	50	5	50	5
-stems, fresh, (4)	4-00-884	45.1	25	3	25	3
Brussel sprouts. Brassica oleracea gemmifera						
-heads, fresh, (4)	4-08-187	14.8	7	2	7	1
Buckwheat. Fagopyrum spp						
-grain, (4)	4-00-994	87.8	85	30	85	30
Burclover. Medicago, lispida						
-seeds, (4)	4-20-113	93.4	50	10	50	10
Cabbage. Brassica oleracea capitata						
-aerial part, fresh, (4)	4-01-046	9.4	5	3	5	3
-aerial part, dehy, (4)	4-15-314	88.3	30	3	30	3
-cannery residue, (4)	4-15-313	15.8	7	3	7	3
Carrott. Daucus spp						
-leaves, fresh, (4)	4-01-143	16.5	nu	nu	nu	nu
-pulp, wet grnd, (4)	4-15-315	14.0	7	3	7	3
-roots, dehy, (4)	4-20-148	11.9	6	3	6	3
-roots, fresh, (4)	4-01-145	11.9	7	3	7	3
Cattle. Bos spp						
-whey, dehy, mn 65% lactose, (4) Dried whey (AAFCO) Whey, dried	4-01-182	92.8	100	3	100	3

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Cassava. Manihot spp						
-starch by-product, dehy, (4)	4-08-572	90.0	90	20	90	15
Cauliflower. Brassica oleracea, botrytis						
-heads, fresh, (4)	4-08-189	[illegible]	5	2	5	2
Celery. Apium graveolens						
-aerial part, fresh, (4)	4-01-195	5.9	3	2	3	2
-stalks, dehy, (4)	4-15-316	90.0	40	3	45	3
-stalks, fresh, (4)	4-01-197	6.3	3	2	3	2
Citrus. Citrus spp						
-pulp wo fines, shredded dehy, (4) Dried citrus pulp (AAFCO) Citrus pulp, dried	4-01-237	90.2	nu	nu	nu	nu
-syrup, mn 45% invert sugar mn 71 degrees brix, (4) Citrus molasses (AAFCO)	4-01-241	66.9	nu	nu	nu	nu
Citrus, grapefruit. Citrus paradisi						
-fruit, fresh, (4)	4-01-242	13.6	nu	nu	nu	nu
-pulp, shredded, wet, (4)	4-01-243	14 [illegible]	nu	nu	nu	nu
Citrus, lemon. Citrus limon						
-pulp, (4)	4-11-753	92.6	nu	nu	nu	nu
Citrus, orange. Citrus sinensis						
-fruit, fresh, cull, (4)	4-01-252	12.8	nu	nu	nu	nu
-cannery residue, dehy, (4)	4-15-318	90.6	nu	nu	nu	nu

Table 3C Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter %	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed %	Young and finishing turkeys: Maximum % base feed it can replace %	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed %	Hens and toms (breeder diets): Maximum % base feed it can replace %
-pulp, shredded wet, (4)	4-01-253	14.4	nu	nu	nu	nu
-pulp wo fines, ammoniated shredded, dehy, (4)	4-01-255	89.0	nu	nu	nu	nu
Corn. Zea mays -ears grnd, (4) Corn and cob meal (AAFCO) Ear corn chop (AAFCO) Ground ear corn (AAFCO)	4-02-849	85.1	50	15	55	20
-grits by-product, mn 5% fat, (4) Hominy feed (CFA) Hominy feed (AAFCO)	4-02-887	89.8	100	80	100	80
Corn, dent yellow. Zea mays indentata -dent yellow, grain, (4)	4-02-935	87.0	100	100	100	100
Dates. Phoenix dactylifera -fruit, dehy, (4)	4-01-752	91.9	60	10	60	10
Emmer. Triticum dicoccum -grain, (4)	4-01-830	90.8	85	40	85	40
Fig, common. Ficus carica -fruit, dehy, (4)	4-01-955	76.0	40	20	45	20
Fish -oil, (7) Blended fish oil (CFA) Fish oil (AAFCO)	7-01-965	100.0*	200	1	200	1
Flax, common. Linum usitatissimum -common, seed screenings, (4)	4-02-056	91.4	nu	nu	nu	nu
Garbage -hotel and restaurant, boiled dehy grnd, (4)	4-07-879	53.6	50	8	50	8
Grains -screenings, mn 70% grain mx 6.5% ash, (4)	4-02-156	90.0	65	15	65	15

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Grain screenings (AAFCO)						
-screenings, uncleaned, mn 12% grain mx 3% wild oats mx 17% buckwheat and large seeds mx 68% small weed seeds chaff hulls dust scourings noxious seeds, (4) Uncleaned screenings (CFA)	4-02-153	92.1	nu	nu	nu	nu
Grapes. *Vitis spp*						
-fruit, dehy, (4)	4-02-203	84.8	45	4	45	4
-fruit, dehy, cull, (4)	4-08-427	84.8	45	4	45	4
-fruit, fresh, (4)	4-02-204	18.1	10	3	10	3
-pulp, dehy grnd, (4) Grape, marc, meal	4-02-208	90.7	45	4	45	4
-pulp, fresh, (4) Grape, marc, fresh	4-02-206	37.5	20	3	20	3
-raisin syrup by-product, (4)	4-08-428	89.4	70	8	70	8
-seeds, (4)	4-20-133	85.0	20	5	20	5
-seeds, dehy grnd, (4)	4-08-082	[illegible]	20	5	20	5
Ipilipil. *Leucaena leuocephala*						
-leaves, dehy grnd, (4)	4-20-446	[illegible]	25	5	30	5
Lettuce. *Lactuca sativa*						
-aerial part, dehy grnd, (4)	4-15-319	90.0	25	5	30	5
-refuse, dehy, (4)	4-15-320	90.0	25	5	30	5

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Melons, pie. Curcurbita spp -fruit w seeds, fresh, (4)	4-08-459	4.1	2	2	2	2
Molasses -see Beet; see Sugarcane; see Citrus						
Nectarine. Prunus persica nectarina -fruit, fresh, (4)	4-20-430	15.8*	nu	nu	nu	nu
Oak. Querus spp -acorns, (4)	4-07-755	70.7	50	10	50	20
Oats. Avena sativa -grain, (4)	4-03-309	89.7	82	50	82	80
Oats, wild. Avena fatua -wild, grain, (4)	4-03-394	91.0	35	10	40	10
Olives. Olea europaea -cannery residue, (4)	4-15-323	91.7	nu	nu	nu	nu
-pulp, dehy, (4)	4-15-322	93.5	40	5	40	5
Onion. Allium spp -seed screenings, (4)	4-15-324	89.1	30	5	30	8
Parsnip. Pastinaca sativa -roots, fresh, (4)	4-03-536	13.7	6	3	7	3
Peaches. Prunus persica -fruit, fresh, (4)	4-20-432	13.1	7	2	7	2
-fruit wo pits, dehy, (4)	4-13-452	90.0	50	3	50	3
Pears. Pyrus spp -fruit, fresh, (4)	4-03-660	17.3	10	3	10	3

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Pineapple. Ananas comosus						
-cannery residue, dehy, (4) Pineapple bran	4-03-722	88.6	25	10	25	10
Plums. Prunus domestica						
-fruit, fresh, (4)	4-20-433	14.3	nu	nu	nu	nu
Potato. Solanum tuberosum						
-Process residue, dehy, (4) Potato by-product, dried Potato pomace, dried Potato pulp, dried Potato waste, dried	4-03-775	88.4	85	20	88	20
-roots, baked dehy, (4)	4-20-153	86.4	85	20	80	20
-roots, cooked, (4)	4-03-784	24.3	85	20	88	20
-roots, dehy grnd, (4) Potato meal	4-07-850	91.1	85	20	88	20
-roots, fresh, (4)	4-03-787	22.8	nu	nu	nu	nu
Prunes. Prunus domestica						
-fruit, fresh, (4)	4-20-359	14.3	nu	nu	nu	nu
-fruit, dehy grnd, (4)	4-20-435	90.0	35	3	35	3
-fruit wo pits, dehy, (4)	4-20-434	90.0	50	5	50	5
Pumpkin. Cucurbita popo						
-fruit, fresh, (4)	4-03-815	9.1	5	5	5	3
Rice. Oryza sativa						
-bran w germ, dry milled, mx 13% fiber calcium carbonate declared above 3% mn, (4)	4-03-928	90.6	40	10	40	10

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Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Rice bran (AAFCO						
-grain wo hulls, grnd, (4) Ground rough rice (AAFCO) Ground paddy rice (AAFCO)	4-03-938	88.8	85	50	85	50
-groats, polished, (4) Rice, white, polished	4-03-942	88.5	95	60	95	60
-polishings, dehy, (4) Rice polish Rice polishings (AAFCO)	4-03-943	90.2	90	30	90	30
Rutabagas. Brassica napobrassica -roots, fresh, (4)	4-04-001	11.4	5	2	5	2
Rye. Secale cereal -flour by-product coarse sifted, mx 8.5% fiber, (4) Rye middlings (AAFCO)	4-04-031	89.2	25	5	25	5
-grain, (4)	4-04-047	88.8	70	8	70	8
Safflower. Carthamus tinctorius -seeds, (4)	4-07-958	92.7	90	15	90	15
Sorghum. [illegible] Sorghum vulgare -grain, (4)	[illegible]	[illegible]	95	[illegible]	95	[illegible]
Sorghum [illegible] Sorghum [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Sorghum vulgare	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Sorghum vulgare [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Sorghum, kaoliang. Sorghum vulgare nervosum -grain, (4)	4-04-431	88.7	95	80	95	80
Sorghum, milo. Sorghum vulgare subglabrescens -milo, grain, (4)	4-04-444	89.0	95	80	95	80
Sugarcane. Saccharum officinarum -molasses, dehy, (4) Cane molasses, dried molasses, cane, dried	4-04-695	90.5	75	8	75	8
Sugarcane. Saccharum officinarum -molasses, mn 48% invert sugar mn 79.5 degrees brix, (4) Cane molasses (AAFCO) Molasses, cane	4-04-696	77.2	65	8	65	8
Swine. Sus scrofa -lard, (4)	4-04-790	100.0*	230	5	200	4
Turnip. Brassica rapa -roots, fresh, (4)	4-05-067	9.6	4	2	4	2
Walnuts. Juglans spp -meats w shells, grnd, (4)	4-20-129	93.2	nu	nu	nu	nu
Watergrass. Hydrochloa caroliniensis -seeds, (4)	4-20-128	90.0	60	60	60	60
Wheat. Triticum spp -bran, dry milled, (4) Bran (CFA) Wheat bran (AAFCO)	4-05-190	89.5	30	20	35	20
Wheat. Triticum spp -germ oil, (7) Wheat germ oil (AAFCO)	7-05-207	100.0	240	2	240	2
-grain, (4)	4-05-211	88.5	95	90	95	90
-grain screenings, (4)	4-05-216	88.9	75	30	75	50

[illegible] Cattle.

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Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
		%	Relative feeding value (kg for kg) compared to base feed %	Maximum % base feed it can replace %	Relative feeding value (kg for kg) compared to base feed %	Maximum % base feed it can replace %
Class 5 feeds (protein supplements)						
Soybean. Glycine max -seeds, solv extd grnd mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	100	100	100	100
Alfalfa. Medicago sativa -seed screenings, (5)	5-08-326	90.3	70	10	70	10
Animal -blood, dehy grnd (5) Blood meal (CFA) Blood meal (AAFCO)	5-00-380	89.2	100	10	100	10
-carcass residue, dry render-d dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal (AAFCO) Meat scrap	5-00-385	92.1	100	35	100	30
-carcass residue w blood, dry or wet rendered dehy grnd, mn 9% indigestible material mx 4.4% phosphorus, (5) Meat meal tankage (AAFCOO Digester tankage	5-00-386	92.6	70	10	70	10
-carcass residue w bone, dry rendered dehy grnd, mn 9% indigestible material mn 4.4% phosphorus, (5) Meat and bone meal (AAFCO) Meat and bone scrap	5-00-388	93.[illegible]	100	35	100	30

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
-livers, dehy grnd, (5) Animal liver meal (CFA) Liver meal Animal liver meal (AAFCO)	5-00-389	92.1	120	5	120	5
Babassu. Orbignya spp -kernels, extn unspecified grnd, (5)	5-00-453	92.7	60	10	65	20
Barley. Hordeum vulgare -malt sprouts w hulls, dehy, mn 24% protein (5) Malt sprouts (AAFCO)	5-00-545	92.3	35	15	40	20
Bean, kidney. Phaseolus vulgaris -kidney, seeds, (5)	5-00-600	88.9	50	20	50	20
Bean, mung. Phaseolus aureus -seeds, (5)	5-08-185	90.0	50	20	50	20
Bean, navy. Phaseolus vulgaris -seeds, (5)	5-00-623	89.7	50	20	50	20
Blood. -see Animal						
Buckwheat. Fagopyrum spp -flour by-product wo hulls coarse sifted, mx 10% fiber, (5) Buckwheat middlings	5-00-991	88.7	40	20	40	20
Buttermilk. -see Cattle						
Carob bean. Ceratonia siliqua -seeds, (5)	5-09-306	81.2	45	30	45	30

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Castorbean. Ricinus communis -seeds, extn unspecified grnd, (5)(must be detoxified) Castorbean meal	5-20-420	90.0	50	20	50	20
Cattle. Bos spp						
-buttermilk, condensed, mn 27% total solids mn 0.055% fat mx 0.14% ash per 1% solids, (5) Condensed buttermilk (AAFCO) Buttermilk, concentrated Buttermilk, condensed Buttermilk, evaporated	5-01-159	29.3	25	10	25	10
-casein, milk acid precipitated dehy, mn 80% protein, (5) Casein (AAFCO) Casein, dried	5-01-162	90.3	125	10	125	10
-cheese rind, (5)	5-01-163	82.8	100	20	100	20
-livers, raw, (5) Beef liver	5-01-166	27.2	nu	nu	nu	nu
-milk, dehy, feed gr mx 8% moisture mn 26% fat, (5) Dried whole milk, feed grade (AAFCO) Milk, whole, dried	5-01-167	96.3	110	10	110	10
-milk, skimmed dehy, mx 8% moisture, (5) Dried skimmed milk, feed grade (AAFCO) Milk, skimmed, dried Skimmilk, dried	5-01-175	93.3	110	10	110	10

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
-spleens, raw, (5) Cattle, melts, raw	5-07-942	23.1	nu	nu	nu	nu
-whey albumin, heat and acid precipitated dehy, mn 75% protein, (5) Dried milk albumin (AAFCO) Milk, albumin, dried Lactalbumin, dried	5-01-177	92.1	125	10	125	10
-cottage cheese, (5)	5-08-001	21.0	25	10	25	10
Chicken. Gallus domesticus						
-gizzards, raw, (5)	5-07-948	25.0	nu	nu	nu	nu
-manure, dehy, (5)	5-20-423	90.0	nu	nu	nu	nu
Chicken, broiler. Gallus domesticus						
-manure w peanut hulls added, dehy, (5)	5-20-426	91.0*	nu	nu	nu	nu
-manure w shavings added, dehy, (5)	5-20-425	91.0*	nu	nu	nu	nu
Clover, red. Trifolium pratense						
-red, seeds, (5)	5-08-004	87.9	nu	nu	nu	nu
-red, seed screenings, (5)	5-08-005	90.3	nu	nu	nu	nu
Coconut. Cocos nucifera						
-meats, mech extd grnd, (5) Coconut meal mechanical extracted (AAFCO) Copra meal, mechanical extracted (AAFCO)	5-01-572	92.8	55	25	55	25

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Corn. Zea mays						
-distillers grains, dehy, (5) Corn distillers dried grains (CFA) Corn distillers dried grains (AAFCO)	5-02-842	93.1	65	10	65	10
-germs wo solubles, wet milled solv extd dehy grnd, (5) Corn germ meal, solvent extracted, (wet milled) (AAFCO)	5-02-898	91.5	65	10	65	10
-gluten w bran, wet milled dehy, (5) Corn gluten feed (CFA) Corn gluten feed (AAFCO)	5-02-903	90.6	45	15	45	15
Cottage cheese. -see Cattle						
Cotton. Gossypium spp						
-seeds, grnd, (5)	5-01-608	92.7	nu	nu	nu	nu
-seeds w some hulls, mech extd grnd, mn 41% protein mx 14% fiber mn 2% fat, (5)	5-01-617	92.7	80	30	70	25
Cowpea. Vigna spp						
-seeds, (5) Blackeye bean	5-01-661	89.0	45	20	45	20
Crab. Callinectes sapidus, cancer spp, Paralithudes camschatica						
-process residue, dehy grnd, mn 25% protein salt declared above 3% mx 7%, (5) Crab meal (AAFCO)	5-01-663	92.3	75	15	75	15

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Fish -stickwater solubles, cooked dehy, mn 60% protein, (5) Dried fish solubles (AAFCO)	5-01-971	92.3	105	10	100	10
Fish, anchovy. Engraulis spp -anchovy, whole or cuttings, cooked mech extd dehy grnd, (5) Fish meal, anchovy	5-01-985	92.0	115	30	110	20
Fish, white. Gadidae (family) Lophiidae (family) Rajidae (family) -white, whole or cuttings, cooked mech extd dehy grnd, mx 4% oil, (5) White fish meal (CFA) Fish, cod, meal Fish, cusk, meal Fish, haddock, meal Fish, hake, meal Fish, pollock, meal Fish, monkfish, meal Fish, skate, meal	5-02-025	91.0	115	30	110	20
Flax, common. Linum usitatissimum -seeds, (5)	5-02-502	90.8	35	8	40	8
-seeds, solv extd grnd, mx 10% fiber, (5) Linseed oil meal, solvent extracted Linseed meal, solvent extracted (AAFCO) Solvent extracted linseed meal (CFA)	5-02-048	89.9	60	8	65	8

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % bas- feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Fly. Mesca domestica -pupae, dehy grnd, (5)	5-20-422	90.0	100	25	100	25
Grains -distillers grains, dehy, (5)	5-02-144	92.6	40	25	45	20
Guar. Cyanopsis tetragonoloba -seeds, wo endosperm, grnd treated w enzymes, (5)	5-20-154	90.0	80	30	80	30
Hemp. Cannabis sativa -seeds, (5)	5-20-136	91.1	40	15	45	15
-seeds, extn unspecified grnd, (5)	5-02-367	92.8	35	15	45	15
Livers. -see Animal; see Cattle						
Lobster. Homarus americanus -process residue, dehy grnd, (5)	5-02-635	90.0	75	15	75	15
Locust. Robinia spp -seeds, (5)	5-20-429	90.8	75	30	80	30
Meat meal. -see Animal						
Meat meal tankage. -see Animal						
Mustard. Brassica spp -seeds, extn unspecified grnd, (5)	5-03-154	90.0	65	20	70	20
Palm. Elaeis spp -seeds, extn unspecified grnd, (5)	5-03-487	91.3	40	20	45	25

Table 30 Feed substitution table for turkeys

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		%	%	%	%	%
Pea. Pisum spp						
-seeds, dehy, (5)	5-20-135	90.5	45	30	45	35
-seeds, grnd, (5)	5-03-598	89.1	45	30	45	35
Peanut. Arachis hypogaea						
-kernels, solv extd grnd, mx 7% fiber, (5) Solvent extracted peanut meal (AAFCO) Groundnut oil meal, solvent extracted Peanut oil meal, solvent extracted Peanut oil meal, solvent extracted	5-03-650	91.9	88	30	88	30
-kernels w skins w hulls (5)	5-03-653	93.4	92	25	92	25
Poultry						
-feathers, hydrolyzed dehy grnd, mn 75% of protein digestible, (5) Hydrolyzed poultry feathers (AAFCO) Feather meal	5-03-795	92.7	100	5	100	5
-viscera w feet w heads, dry or wet rendered dehy grnd, (5) Poultry by-product meal (CFA)	5-03-799	93.0	100	30	100	25
Rape. Brassica spp						
-seeds, solv extd grnd, (5) Rapeseed oil meal, solvent extracted Rapeseed meal, solvent extracted	5-03-871	91.3	75	20	75	25

Table 30 Feed substitution table for turkeys

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		%	%	%	%	%
Sweetclover, yellow. Melilotus officinalis						
-yellow, seed screenings, (5)	5-08-007	87.3	nu	nu	nu	nu
Tomato. Lycopersicon esculentum						
-pulp, dehy, (5) Dried tomato pomace (AAFCO)	5-05-041	92.5	20	10	25	10
-pulp, wet, (5)	5-05-042	25.0	6	5	6	5
Wheat. Triticum spp						
-germ, grnd, mn 25% protein mn 7% fat, (5) Wheat germ meal (AAFCO)	5-05-218	88.2	50	10	50	10
Cattle. Bos spp						
-manure, dehy grnd, (7)	7-01-190	93.5	nu	nu	nu	nu
Rubbertree, para. Hevea brasiliensis						
-seeds, extn unspecified caked (5)	5-20-147	86.0	35	15	35	15
Rye. Secale cereale						
-distillers grains, dehy, (5) Rye distillers dried grains (AAFCO) Rye distillers dried grains (CFA)	5-04-023	93.0	30	10	35	10
Safflower. Carthamus tinctorius						
-seeds, mech extd grnd, (5) Safflower seed, mechanical extracted (AAFCO)	5-04-109	91.7	35	20	40	20

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys		Hens and toms (breeder diets)	
			Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace	Relative feeding value (kg for kg) compared to base feed	Maximum % base feed it can replace
		%	%	%	%	%
Sesame. *Sesamum indicum*						
-seeds, mech extd grnd, (5)	5-04-220	92.7	80	20	85	20
Silkworm.						
-pupae, dehy grnd, (5)	5-20-421	90.0	75	20	80	20
Shrimp.						
-process residue, dehy grnd, (5)	5-13-541	90.0	95	20	95	20
Sorghum, grain variety. *Sorghum vulgare*						
-distillers grains, dehy, (5) Grain sorghum distillers dried grains (AAFCO)	5-04-374	93.8	50	10	50	10
Soybean. *Glycine max*						
-seeds, (5)	5-04-610	90.6	100	50	100	50
-seeds, solv extd grnd, mx 7% fiber, (5) Soybean meal, solvent extracted (AAFCO)	5-04-604	89.2	100	100	100	100
Spleens.						
-see Cattle						
Sunflower. *Helianthus spp*						
-seeds, solv extd grnd, (5) Sunflower meal, solvent extracted (AAFCO)	5-09-340		50	30	50	30
-seeds wo hulls, solv extd grnd, (5) Sunflower meal, dehulled, solvent extracted (AAFCO)	5-04-739	93.0	85	30	85	25

Table 30 Feed substitution table for turkeys

Feedstuff	International reference number	Dry matter	Young and finishing turkeys: Relative feeding value (kg for kg) compared to base feed	Young and finishing turkeys: Maximum % base feed it can replace	Hens and toms (breeder diets): Relative feeding value (kg for kg) compared to base feed	Hens and toms (breeder diets): Maximum % base feed it can replace
		%	%	%	%	%
Yeast, active. *Saccharomyces cerevisiae* -active, dehy, mn 15 billion live yeast cells per g, (7) Active dry yeast (AAFCO)	7-05-524	89.9	60	20	60	20
Yeast, brewers saccharomyces, *Saccharomyces cerevisiae* -brewers saccharomyces, dehy grnd, (7) Brewers dried yeast (CFA)	7-05-528	93.4	115	10	115	10
Yeast, primary saccharomyces. *Saccharomyces cerevisiae* -primary saccharomyces, dehy, mn 40% protein (7)	7-05-533	92.9	115	10	115	10

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